First Aid and Medical Service in Industry

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FIRST AID AND MEDICAL SERVICE IN INDUSTRY

Compiled from
A SURVEY

PUBLISHED BY
JOHNSON & JOHNSON
NEW BRUNSWICK, N. J.

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JOHNSON & JOHNSON
NEW BRUNSWICK, N J.

Foreword

THIS book is a condensation of the result of a special survey of a number of typical industries in the United States.

The survey was made principally to ascertain the methods employed in the industries in applying first aid measures to injured employees.

The survey was also made to include the service rendered to employees in the treatment of injuries, following the preliminary measures of first aid. Incidentally and briefly, the survey included accident prevention and safety measures, physical examination of employees, welfare work among employees, as well as general or special medical service when such was rendered to employees.

The results of the survey are here given in condensed form, tables, statistics and other details being omitted in order to avoid tedious repetition and also to bring the work within reasonable limits and increase its usefulness.

In the reports of specific industries surveyed, only certain types have been selected and only salient points included. The work, it is believed, is the first attempt at such a survey of so important a field.

The review has been published in response to the requests of many workers in the field.

In addition to the survey itself the book contains discussions of certain phases of the first aid work and medical service, which have been furnished by the authorities mentioned.

The publishers at whose instigation the survey was made acknowledge their obligations to the various industries, named and unnamed, who cordially assisted in furnishing the information herein given. They likewise desire to express their appreciation to the many bureaus and agencies, governmental and civil, who have assisted by their suggestions and encouragement in the preparation of the report.

Introductory

THE reports here briefly summarized are the results of an extended survey made by Dr. H. L. Daiell, covering some seventy industries selected as representative of various lines and types, with a view of ascertaining the methods and measures employed in the care of injured employees. Incidentally, there came within the survey such measures as the medical and surgical service rendered to employees, welfare and social service and allied matters.

In the course of the survey, consultations were held with National and State Bureaus, organizations, accident and casualty insurance companies, medical and service bureaus, individuals and institutions interested in the work of first aid and allied service. The survey was intended in the main to cover the following subjects:

EQUIPMENT:

- First Aid Cabinet
- First Aid Room
- Dispensary and Emergency Hospital
- Hospital

STAFF—*First Aid and Medical Service*

- First Aid Workers
- Nurses
- Part Time Physician
- Full Time Physician

DENTAL AND OCULIST SERVICE

PHYSICAL EXAMINATIONS

WELFARE WORK

- Visiting Nurse
- Social Service
- Rest Rooms
- Publications, etc.

FIRST AID BY LAYMEN

- Individuals
- Teams

The main types of industries and organizations visited were as follows:

Railway Companies	12
Steel Industries	6
Telephone and Telegraph Companies	5
Electric Industries	7
Machine and Foundry Companies	9
Rapid Transit Companies	2
Automobile Industries	6
Paper Mills	3
Rubber and Tire Manufacturers	1
Gas and Light Companies	1
Coal Companies	1
Oil Companies	2
Chemical Works	1
Specialized Manufacturers	2
Hat Manufacturers	1
Insurance and Casualty Companies	5
Government Bureaus	4
Medical and Industrial Service Bureaus	10
State Departments of Labor	4
Industrial and Safety Associations, Organizations and Individual Authorities	18

The industries surveyed according to number of employees were as follows:

Over 100,000	5
50,000 to 100,000	8
30,000 to 50,000	9
20,000 to 30,000	4
10,000 to 20,000	13
5,000 to 10,000	11
Under 5,000	14

It should be borne in mind that the opinions given in the survey are those of the observer unless otherwise credited. These opinions, however, are based upon the impressions received during the survey, through actual observations, and the statements made by those engaged in the service.

First Aid and Medical Service in Industries

FROM SURVEY

TO the mind of the observer, the situation in industries in reference to First Aid, as well as to medical service, is encouraging. In many places rapid strides are being made in bettering the already favorable conditions.

Analyzing the situation briefly, we find that similar types of industries conduct their affairs in a like manner. For example, the railroads invariably have a Chief Surgeon, several assistants and a large number of physicians on call at various points. Other groups of allied industries adopt a similar program with reference to accident prevention, welfare and other features. There is also a similarity of attitude towards First Aid by the laymen entertained by organizations of similar type.

It is apparent that many industries are decidedly in advance in their methods of First Aid, health service, accident prevention, etc., while the remaining organizations are in the process of advancing to a high level, or are doing their best to improve whatever deficiency they may show.

Two important facts may be observed.

1. That the majority of industrial surgeons object to the term "First Aid." They prefer to employ the phrase "Medical Service," which not only includes First Aid, but also physical examination and medical or surgical treatment of other types of ailments.

2. The fact that the industry is large does not necessarily imply that its medical and safety organizations are better than those in a small plant. The survey shows highly efficient organizations in industries of moderate size.

This survey was not intended to include accident prevention measures; its primary object being to deal with the care of the injured. It is noteworthy, however, that in many of the industries highly efficient systems for accident prevention were in operation. These systems in many instances have given highly satisfactory results. These efforts are in part due to legal enactments requiring the installation of safety appliances in hazardous industries.

In the greater measure, however, accident prevention programs are carried on voluntarily by the industries themselves. Many industries have been able to markedly reduce the number of accidents in their plants through well directed efforts aimed at the teaching and putting into practice, systems covering safety and accident prevention. Organizations such as the National Safety Council, the Metropolitan Life Insurance Company, the U. S. Bureau of Mines, various Bureaus and State Departments have been untiring in the work of advising industries as to measures and methods calculated to prevent accidents.

FIRST AID

In many industries, systems of First Aid are well developed. These may be divided into groups. In one group any First Aid treatment by an individual other than the physician is prohibited. Twenty-six of the organizations covered in this survey adhere to this principle. In these cases the medical organization is both elaborate and extensive, the plants are so centralized as to enable the injured to receive immediate treatment at the dispensary or hospital. In other industries, laymen are permitted to apply First Aid Treatment. This is done through necessity. The plants and work are scattered to such a degree that the injured might have to wait too long before the arrival of medical aid. In organizations such as railway, telephone and telegraph companies, employees are at work in places remote from immediate medical aid. Under such conditions first aid by the laymen is not only imperative, but also a boon.

To enable the laymen to perform this work properly, first aid teams are organized and trained. This was found to be the case in thirty-two industrial organizations.

The workers are usually taught:

1. How to treat hemorrhage
2. How to treat asphyxia
3. Splinting in emergencies
4. What not to do

These teams are given lectures as well as practical demonstrations. The plant physician or the company surgeon is assisted in this work by the Safety Engineer or representative of the American Red Cross, U. S. Bureau of Mines, etc. It has been the custom to stage frequent contests between the several teams of one plant, as well as between representative teams of different plants.

Frequently, however, the teams are organized for the sole purpose of mastering the art of resuscitation.

In a number of organizations the employees are given lectures on First Aid, with the intention of transmitting this knowledge into the everyday life of its worker.

Several industrial surgeons have opposed the organizing of First Aid teams and the teaching of First Aid to laymen in general, in the belief that injuries arising in industries or even in everyday life, were best cared for in the hands of a physician.

FIRST AID CABINETS

Out of seventy-three organizations, there were thirty-eight who employed First Aid cabinets. Of these nineteen, or one-half, employ a standard type of cabinet. Similar industries employ similar types of outfits. This is especially the case with the telephone and telegraph companies. Foundries, and plants of similar nature, use cabinets designed to meet their needs. The supplies found in cabinets are not the same at all times, and in certain instances, no two cabinets have the same number or kinds of articles. Some of the industries also employ a standard type of cabinet along with the one of their own make. Many of the railroads carry on their cars First Aid packets recommended by the American Railway Association.

The American Railway Association are using their influence to standardize the First Aid packet carried on cars. This proposal will undoubtedly be favorably received by the industry.

The contents of the different First Aid cabinets are at times varied to suit the industry in which they are used. In one type of cabinet, dressing for given injuries are packed in cardboard boxes, each separate and distinct. This serves not only to provide for an even distribution of the articles within the box, but also enables the other dressings to remain intact by the removal of one or more of its members. The refilling of supplies is equally simplified, inasmuch as each box contains an index on the inside, and since the boxes are properly labelled, the missing articles can readily be seen. Each separate box carries an illustration showing dressings contained therein.

A pocket type of kit is also distributed by some industries to individual workers. These kits contain articles to be used in the treatment of small lacerations, punctured wounds, burns, etc.

Quite generally, cabinets contain bandages, but none of the other articles are universal. It was noted that while many contain adhesive tape, in other cabinets this article has been re-

placed by the compress bandage. Out of the thirty-eight types of cabinets examined, twenty-four contained iodine as the antiseptic, while ten contained mercurochrome, and in four instances, neither antiseptic was present.

It was found that nineteen cabinets out of thirty-eight concained a triangular bandage, and twenty-six out of thirty-eight tontained a tourniquet. It might be noted that these two articles are the most criticized of any found in the cabinets. Many physicians state that the triangular bandage is a subterfuge for proper bandaging. Others assert that the tourniquet in the hands of a layman is a dangerous weapon, and that instances have been noted where a complete stoppage of circulation in extremities followed the use of the tourniquet, resulting in the necessity for amputation of the limb.

The compress bandage was found to be gaining in popularity. Forceps, scissors and safety pins were found in twenty-four cabinets. Splints were noted in sixteen of the cabinets.

Applicators and depressors were present in eighteen instances. A burn ointment appeared in twenty-seven cabinets.

Medicines, chiefly aromatic spirits of ammonia, were found in twenty-eight. There were also noted miscellaneous articles such as alcohol, drinking cups, teaspoons, tincture of green soap, etc., in nearly one-half of the cabinets.

PHYSICAL EXAMINATIONS

Out of sixty-four plants surveyed, eighteen stated that they examine all the new employees, and re-examine all employees periodically. In the majority of instances, the periodic examination is held annually. In one place, all employees, including the executives, are examined semi-annually. In several plants, the periodic examinations are held at longer intervals; in some instances, at irregular periods.

In many cases, the periodic examination is extended only to the "key men," such as executives, superintendents, managers, etc. In other instances, the periodic examination is extended only to men in a certain line of employment; for example, signal men and engineers on railroads, or men employed in such capacity as to make them susceptible to some occupational disease.

Forty per cent of the industries examine new employees only. The old employees, however, are given a physical examination whenever complaining of illness.

In six of the industries visited no examination was held on entrance, but all employees were entitled to an examination when complaining of illness.

The majority of persons interviewed agreed that a periodic physical examination is beneficial alike to the employees and employer, and that the system of periodic examination is gradually working its way into industries. Many believed that it is only a question of time when the majority of industrial plants will have an organized system for entrance and periodic physical examinations.

MEDICAL ORGANIZATION

This was found in general to be of high standard. In the number of industries visited, twenty-six employ full time physicians. Fourteen industries employ part time physicians only, and the remaining groups, which include railroads, etc., employ both part time and full time physicians.

In reference to the question of the employment of a physician for part or full time in industrial organizations, the observer interrogated individuals at the plants visited. Several hesitated to express an opinion, stating that plants and industries differ greatly in matters of location, centralization of buildings, as well as the hazardous nature of the work. Many of those interrogated were chief surgeons of the plants visited; others included safety engineers, superintendents, and executives.

The following table shows the answers to the question as to how many employees warranted the employment of a part time physician:

Number of Employees	*In Favor of Part Time Physicians*
Part time preferred regardless of number	26
Below 1,000	15
Below 2,000	5
Below 3,000	4
200 and below	3
700 and below	3
Below 500	3
500	2
100	2
1,500	1
Below 4,000	1
Below 10,000	1
Total	66

To the question as to the number of employees necessary for the employment of a full time physician, the following opinions were given:

Number of Employees	*In Favor of Full Time Physicians*
1,000	17
2,000	6
500	6
800	3
3,000	3
3,500	1
4,000	1
10,000	1
250	1
100 (at the Mines)	1
Any hazardous work	6
Full time preferred	1
Total	47
Total Number of Opinions	113

These figures indicate that twenty-five per cent of those interrogated favor a part time physician, regardless of the size of the plant. Nearly all conceded that where one full time physician is necessary, two part time physicians could be employed. This will enable the physicians to devote some time to private practice, and thus keep in touch with the progress of medicine and surgery. Such an arrangement will benefit the physician, from the standpoint of knowledge and remuneration. It will also be of advantage to the employer and employee, both of whom will be served by physicians who have kept abreast with the times, instead of one whose technique has become narrowed through years of association with the same plant.

Of the men who favor the employment of a full time physician, nearly one-half name 1,000 employees as the controlling number. About one-third favor a full time physician for 1,000 employees or less. They state that by this arrangement the plant will be benefited by having the entire time of the physician at its disposal. Also, that where periodic physical examinations are advisable, and where the work is hazardous and compensation problems are numerous, a physician will have very little time to himself after he has performed full duty to the plant.

Dr. R. R. Sayers, of the United States Bureau of Mines, favors a full time physician for every one hundred miners; his reason

being that miners must be watched daily for any signs of occupational disease. The same is the case with respect to stone grinders, lead workers, zinc workers, and men in like occupations.

Opinion on this question must differ by reason of the fact that so many of those questioned favor a part time physician regardless of the size of the plant or of the hazards involved. Opinions are largely affected by the type of industry to which the informant is attached.

DENTAL SERVICE

In twenty-four of the plants visited, a dental service is maintained. The dental service usually carries a three-fold purpose:

1. As a part of the routine physical examination
2. As a prophylactic measure in the cases of employees that require such treatment
3. For those employees who voluntarily apply for examination

In several cases, treatment is given at nominal rates. In other instances, the examination is made, the lesions enumerated, and the employee asked to consult his dentist.

MEDICAL SERVICE EQUIPMENT

Fourteen industries were visited who maintained their own hospitals. In some instances, these hospitals were open to patients other than employees. In a few cases, the company owned only certain privileges in the institution. In seven instances, the hospital was owned by the company and admitted its own employees only.

Thirty-five industrial organizations, or more than one-half of the number surveyed, showed a large medical service department. Eighteen devote an entire building to the medical department, while the others maintain a large space in one or more buildings.

The number of rooms devoted to the work of First Aid and medical service varies with the type of industry, the type of work carried on, as well as being governed by the arrangement of the plant itself. In some of the industries visited upward of twenty-five rooms were devoted to the service. These included rooms for physical examination, emergency rooms, dispensaries, clinics, operating rooms, rest rooms, etc.

Originally, white was the universal color in all dispensaries and hospitals, rooms, etc. This tone, however, is rapidly being replaced by other colors. One is a light tan and the other, still more recent, is the use of a neutral green shade.

The following color schemes were noted in the interior of the Medical Departments: Green, 12; tan, 17; white, 35.

Several minor features were brought out in this survey. The following is a list of opinions of industrial surgeons as to the ideal general antiseptic:

Number of surgeons preferring iodine as a general antiseptic, 26.

Number of surgeons preferring mercurochrome as a general antiseptic, 37.

Number using both regularly, 10; number using special preparations, 2.

Other items were noted as follows:

Number of plants with X-ray facilities, 35.

Number of plants with physiotherapy department, 36.

Number of plants with regular oculist service, 22.

WELFARE

The majority of the industries visited carry out a welfare program. Fifteen companies of the number visited are doing very little welfare work. One reason given for this action is the fact that the "turn over" of labor is too great. Other statements were to the effect that welfare work had been impracticable and unprofitable. Many companies carry on an extensive program of welfare work, which includes social and visiting nurse service, bonuses, prizes, group insurance, sick benefits, etc.

Many State Laws require that rest rooms be maintained for women. Some of these enactments require rest rooms even when as low as five are employed. Of the plants visited, many maintain rest rooms for men.

Survey of Individual Industries

(CONDENSED REPORT)

American Car and Foundry Company

Wilmington, Del.

This organization employs 1,000. A large accident prevention program is carried on continually, with excellent results. The figures show that no fatalities have occurred since 1922. Lectures on accident prevention are given regularly.

First aid teaching is confined solely to methods of resuscitation. All employees are directed to report to the dispensary in case of injury. No first aid cabinets are kept.

The medical organization consists of a part time physician and a full time nurse. The dispensary contains:

1. Waiting room.
2. Surgical room.
3. Doctor's office.
4. Dressing room.
5. X-ray room.
6. Dark room.

American Locomotive Co.

Schenectady, N. Y.

This organization employs 4,500 to 5,000, with no female employees. The medical work is supervised by a full time physician and a full time male nurse. The dispensary treats an average of 20 cases a day. Physical examinations are given to all new employees.

First aid is taught to a number of selected men to do whatever is necessary before the case reaches the dispensary. Two first aid cabinets are kept at the gate houses, but there are no organized first aid teams. The dispensary has an extensive layout, which consists of:

1. Waiting room.
2. Doctor's office.
3. Physiotherapy room.
4. X-ray and dark room.
5. Examining room.
6. Surgical room.

Both iodine and mercurochrome are used as general antiseptics.

REST AND EXAMINATION ROOM
AMERICAN OPTICAL COMPANY, SOUTHBRIDGE, MASS

MAIN SURGICAL ROOM
AMERICAN OPTICAL COMPANY, SOUTHBRIDGE, MASS

American Optical Company

Southbridge, Mass.

This organization employs 5,000. The medical service is supervised by a full time physician and two nurses. There are two dispensaries on the grounds, one larger than the other. No first aid is given by laymen except at night, and even then the doctor and nurses are on call. There are no standard first aid cabinets, but 100 first aid outfits are kept ready for use at night. The general antiseptic preferred is mercurochrome.

As for physical examinations, all new employees are examined with much emphasis laid on vision. The eye examination is repeated every 5 years. Executives are examined at more frequent intervals.

The larger of the two dispensaries consists of about six rooms:

1. Main surgical room. This can be partitioned off by suspended curtains, thus creating separate compartments. The equipment here is well adapted for surgical dressings, eye, ear, nose and throat work. One corner of this room is given to routine laboratory work. Only minor surgery is done here.
2. Doctor's office.
3. Optical room. The apparatus includes eye instruments, eye chart with reflecting mirror, perimeter, and a very powerful ophthalmoscope.
4. X-ray room with modern equipment.

5 and 6. Rest rooms.

American Radiator Co.

Buffalo, N. Y.

This company employs 6,000.

The medical staff for the Buffalo district consists of:

One full time physician.
One part time physician.

Dispensaries are maintained in 5 plants. In all of these, except one, nurses are in charge. In the largest dispensary the surgeon supervises. In one plant, the first aid work is done by 2 first aid men. The company sends its major cases to a hospital in Buffalo.

There is no training of men in first aid. In one plant only are the men organized into teams, and taught the methods of resuscitation.

EMERGENCY ROOM AND DISPENSARY
AMERICAN OPTICAL COMPANY, SOUTHBRIDGE, MASS

DISPENSARY
BOND PLANT, AMERICAN RADIATOR COMPANY, BUFFALO, N. Y.

The largest dispensary in Buffalo contains:

Waiting room.
Doctor's room.
Dental room.
Surgical room—large and well equipped.
Surgical room—small and well equipped.
Special room for heat prostration cases.
Physiotherapy room—divided into compartments—very well equipped.

Iodine is the preferred antiseptic.
Physical examinations are given to all new employees.
An extensive safety program is conducted.

American Rolling Mill Co.

Middletown, Ohio

This company employs 4,000.

The safety department is very active. Posters, signs, bulletins and publications aid in this work.

First aid is taught by representatives of the U. S. Bureau of Mines. Men are drawn from all departments and number 15 to 60 to a class. They are taught all the phases of first aid, except the treatment of wounds. The representative team of this company won the national honors in 1926.

No first aid cabinets are kept on the grounds, but the safety men carry auto kits.

The medical organization consists of:

2 full time physicians.
13 nurses.
1 social service worker.

The central dispensary, occupying an entire building, is actually a hospital. Major surgery is done here and the cases are placed in wards maintained in the building. The rooms are:

Waiting room and extension.
Surgical room—for minor surgery.
Record room.
Emergency room with physiotherapy apparatus.
X-ray room.
Rest room for injured.
Hospital ward—3 beds.
Operating room—with equipment for major surgery.

EMERGENCY AND SURGICAL DRESSING ROOM
BOND PLANT, AMERICAN RADIATOR COMPANY, BUFFALO, N. Y.

EMERGENCY ROOM
BOND PLANT, AMERICAN RADIATOR COMPANY, BUFFALO, N. Y.

Doctor's office.
Hospital ward—4 beds.
6 examining booths—for physical examinations.
Restaurant for doctors and hospital force.

The preferred antiseptic is iodine.
Physical examinations are given:

To all new employees.
Annually to executives.

A rest room is kept for women, and several club rooms for men.
The welfare program includes:

Visiting nurse.
Publications.
Band.
Athletic teams.
Group insurance.
Compensation insurance.
Restaurant.

American Telephone & Telegraph Co.

New York

The American Telephone and Telegraph Company and Associated Companies maintain medical departments at certain points, generally in the larger metropolitan operating areas.

The general operating policy in these medical departments is practically uniform. The services rendered include first aid in accident and first aid in sickness. In certain parts of the country the continued care of accident cases is maintained throughout their convalescence. In other parts of the country the medical service with reference to accidents is solely supervisory. In certain localities diagnostic service is provided; where sickness and accident problems of more than usual gravity arise, advice with reference to medical or surgical problems involving the employee is provided. Popularization of health education material are other functions of the medical departments.

First aid training follows the lines of the American Red Cross. The equipment used consists of Bell System standard first aid materials. This material is distributed in three different types of kit. Large kits, which are kept in motor vehicles, central office terminal rooms, store rooms, garages, etc., and smaller kits of the pocket type, which are carried by the men.

DISPENSARY
MAIN PLANT, AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

EMERGENCY ROOM
AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

In addition to the first aid kits used by the plant department in the field, there is a first aid emergency cabinet used in the telephone operating rooms. At all points lists of medical men are posted in a prominent place, so that they may be called upon in important emergencies.

The general policy of medical work in the System is one of cooperation between the employee and the employee's physician. First aid treatment is afforded only in the event of sickness or in the event of accident. Subsequent treatment, except in certain accident cases, is carried out by the employee's physician.

This organization employs 356,000. 4,000 to 8,000 men are trained in first aid. They are taught:

How to stop hemorrhage.
How to start respiration.
How to make the injured comfortable.
What not to do.

The medical department is very large. Several physicians and many nurses are in constant attendance. The number of cases treated average 50,000 to 60,000 annually.

Physical examinations are given to new employees and to all other employees annually.

The layout consists of:

Electro-cardiograph rooms.
Physiotherapy rooms.
Two surgical rooms.
X-ray department.
Laboratory.
Rest rooms.
Dental rooms, etc.

Besides the electro-cardiograph, there is an especially large X-ray and fluoroscopic apparatus, as well as a highly specialized stereoscope.

Baltimore & Ohio R. R.

Baltimore, Md.

This organization employs 75,000 to 80,000—with very few women. The medical organization consists of:

One medical and surgical director.
Six consulting surgeons.
50 full time medical examiners.
Six hundred and fifty surgeons on call along points of the railroad.

WARD, MAIN HOSPITAL
AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

DISPENSARY
CENTRAL WORKS, AMERICAN ROLLING MILL COMPANY, MIDDLETOWN, OHIO

The emergency work is divided among:

Two emergency dressing stations in Baltimore.
One emergency dressing station in Pittsburgh.
Twenty large shops with dressing equipment.
Fifty small shops with dressing equipment.

First aid is taught to as many men as possible from the manual published by the railroad with frequent lectures. First aid teams are organized at all shops.

First aid cabinets are present in numbers in two types:

Standard shop cabinet. Designed by the company. Large with several compartments containing besides surgical supplies: blankets, pillows, stretcher, crutches, splints, etc.
Portable type placed on cars, towers and stations contains first aid packets, cotton, bandage and bicarbonate of soda.

The company maintains a ward of its own at a hospital in Baltimore, and has contracts with principal hospitals along its lines.

Physical examinations are given:

Upon entering the employ.
Bi-annually on sight, hearing and color sense of train crews, signal men, etc.
When complaining of illness, or where physical condition suggests necessity.

The company conducts an extensive welfare program for its employees, with all forms of recreation given through the Railroad Y. M. C. A. Rest rooms are maintained for the men in abundance.

The largest B. & O. shop in Baltimore employs 3,000. The dispensary which treats about 50 cases daily is supervised by a full time physician and a full time nurse. The dispensary occupies four rooms with suitable equipment. Minor surgery is performed here, but as many cases as possible are hospitalized.

J. G. Brill Company

Philadelphia, Pa.

This organization employs 1,800 males and 250 females.

There is no first aid training of employees and no first aid cabinets on the grounds. All cases are treated at the dispensary, which is under the supervision of a physician, dentist and two nurses.

ROOM FOR EXAMINING APPLICANTS FOR EMPLOYMENT
BROOKLYN-MANHATTAN TRANSIT MEDICAL BUREAU, BROOKLYN, N. Y.

WAITING ROOM FOR EMPLOYEES TO BE EXAMINED
BROOKLYN-MANHATTAN TRANSIT COMPANY, MEDICAL BUREAU, BROOKLYN, N. Y.

The service is divided into:

Male.
Female.
Dental.
Ophthalmological.

Physical examinations are given to all new employees and to all employees every three years.

The layout of the medical department consists of:

Dental clinic.
Waiting room.
Laboratory.
Main surgical room.
Rest room, etc.

Brooklyn-Manhattan Transit Co.

Brooklyn, N. Y.

Employees, 18,000.

Medical Staff: 2 full time physicians, 7 part time physicians, 1 first aid worker, clerks, etc.

The part time physicians spend two hours daily at the dispensary. They make house calls to sick employees when necessary. The city is divided into zones and each zone is given to a physician.

The first aid system is now being reorganized.

Cabinets: 240 in use. These have recently been changed to three main types, varying in size and amount of contents. Several larger cabinets are placed at power houses, work shops, etc.

Physical examinations:

New employees.
Periodic—motormen and signalmen annually, others every two years.

Medical department:

Medical.
Surgical.
Examination of new employees.

Layout:

Waiting rooms.
Doctors' offices.
Surgical dressing rooms.

EXAMINATION AND CONSULTING ROOM
BROOKLYN-MANHATTAN TRANSIT COMPANY, MEDICAL BUREAU, BROOKLYN, N. Y.

SECTION OF DISPENSARY
HAWKEYE WORKS, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Dark rooms for vision tests.
Nose and throat room.
Physiotherapy room.

Preferred antiseptic: mercurochrome.

Number of cases daily: new employees, 30; medical, 125; surgical, 45; physiotherapy, 18.

Hospital cases are sent to St. Peter's Hospital in Brooklyn.

Budd Wheel Co. — E. G. Budd Mfg. Co.

Detroit, Michigan

Number of employees, 3,000; females, 200 to 300.

Medical staff:

1 full time physician.
3 nurses, clerks, etc.

No first aid is done by the layman and, therefore, there are no first aid cabinets in use. All of the injured and ill are required to report to the medical department.

Safety work: under supervision of the medical department includes lectures, bulletins, posters, etc.

Physical examinations:

Upon entering employ
When ill

Medical department: open day and night. Cases monthly, 3,250; new cases monthly, 500.

One of the hospitals in Detroit is used in caring for the severely injured and ill.

Layout and equipment:

Waiting room—joined with employment department.
Doctor's office.
Examination room.
Main surgical room: Equipped with modern apparatus.

Welfare:

Rest room for women.
Group insurance.
Athletic competition.
Recreational activities.
Special restaurant for employees.

Carnegie Steel Corporation

Clairton, Pa.

This plant employs 6,000—very few women.

The medical organization consists of:

2 part time physicians.
4 nurses, including visiting nurse.

The work is done in an emergency hospital—open day and night.

The hospital takes care of 75 to 100 cases daily. It occupies an entire building and consists of:

1. Waiting room.
2. Surgical room—well equipped.
3. Surgical room—for minor operations and eye work; contains X-ray machine.
4. Hospital rest room—3 beds, Diathermy machine, etc.
5. Bath room—equipped for hydrotherapy.
6. Nurses' rest room.
7. Filing room.

The equipment is excellent. Carrél Dakin solution and Ochsner's fluid are the preferred antiseptics.

Physical examinations are given to:

New employees.
Those complaining of illness.

The examination for new employees is not only physical, but psychological as well. The applicant is ordered to do things in such a way as to conclusively prove his intellectual level.

First aid is taught to employees. Classes are organized and are trained in the elements of first aid and in resuscitation. They are not expected, however, to treat wounds. Forty first aid cabinets are kept on the grounds. These contain first aid boxes as well as a stretcher and blanket in each. The first aid box contains:

Spirits of ammonia.
Sterile gauze compresses.
Safety pins.
Triangular bandages.
Roller bandages.

The Safety Department conducts the accident prevention work. Lectures, meetings, posters, bulletins, etc., are parts of the program. Frequent inspections are held.

Some points worthy of mention in the handling of first aid work at the Carnegie plants, follow:

1. In the treatment of wounds the technique of major surgery applied to minor surgery. Forceps technique in putting on and removing all gauze. No fingers allowed to come near a wound. The Carrél Dakin technique modified to suit ambulatory cases.

2. The handling of wounds in such a way that the patient does not touch anything in the room but his chair, and the dressing surgeon touches nothing but patient till the surgeon "scrubs up."

3. The treatment of burns as a special kind of wounds, peculiarly susceptible to infection. Hence a rigid aseptic technique, including careful cleansing and sterilization (relative) of surrounding skin. The wax treatment used in all severe cases.

4. The cotton splint or other splint as indicated in sprains, with remedies to allay pain and swelling, and hasten absorption of exudate. Also long period of rest in sprained ankle with adequate support in severe cases, for one or two months.

5. A hospital always spotlessly clean; always attractive and cheerful, with every possible avoidance of offensive sights and smells.

6. Hospital arranged and equipped for the highest efficiency—so that 75 to 100 patients can be cared for daily with a maximum of speed in a minimum of time and with the least effort.

7. Up-to-date X-ray and electrical equipment—every suspicious case X-rayed; diathermy, etc., as indicated.

8. A plant 3 miles long with 6,000 men, cared for in one hospital—ambulance service including bringing men from plant and homes for redressings, this by a well arranged schedule by the relay system, so men do not wait long for redressings, and hence lose a minimum amount of time from work.

9. A thoroughly organized system of safety committees with central committee, of which surgeon is a member. "Team work" on the part of medical and surgical departments, safety department, welfare department superintendents, foremen, men and management for safety.

10. Full co-operation of superintendents with the hospital as to all details of the work.

11. Careful selection of nurses with regard to training, personal fitness, attractiveness, kindness, personality. It takes a year for them to train one of these to do their work as they want it done.

12. An air of cheerfulness, kindness and personal interest at all times—a light-heartedness that cheers the injured. It is stressed at all times that every police officer, orderly, nurse or surgeon must treat every employee with the utmost kindness, courtesy and consideration,

"regardless of race, color or previous condition of servitude." As Shoudy so well says: "Make your hospital a place where the men love to come."

13. Getting every injured man back to work at the earliest possible moment with some kind of useful employment (occupation therapy). They feel that every case is a problem in applied psychology and suggestion should be begun as soon as a man is hurt, that he is going to be so restored, that he is going to get back to work—going to remain a useful member of the community, no matter how badly he is injured. This needs perfect cooperation on the part of all contacts—plant, hospital force, welfare department, compensation department, superintendent and foremen.

14. An extremely liberal attitude of the General Superintendent and Company on the financial side. They desire that their injured men get the best that can be obtained in hospital care, equipment, dressings and service; and never haggle about cost.

15. A Chief Surgeon, with trained assistants and special wards in West Penn and St. Francis Hospitals, Pittsburgh, where the severe injuries are cared for. The surgical force of the Carnegie Steel Company and the H. C. Frick Coke Company, numbering 75 surgeons, is a trained unit working under Dr. Wm. O. Sherman.

16. The Clairton Hospital is only one of many similar ones built and equipped by The Carnegie Steel Company, to care for its 50,000 employees.

Chicago Rapid Transit Co.

Chicago, Ill.

This organization employs 17,600.
The medical staff includes:

6 physicians—2 full time, 4 part time.
1 ophthalmologist.
1 dentist.
1 X-ray technician.
2 nurses.
1 laboratory technician, etc.

The number of cases treated were 3,930 in the month of August, 1926.

First aid is taught to the layman. He is expected to make the patient comfortable until the physician arrives. He may dress the wound or splint the fracture and place the patient in the stretcher. The city is divided into zones and the doctor in the

zone of accident is called. If he is unavailable, the case is rushed to the zone hospital.

Different groups of men are trained in first aid—about 250 at a time.

First aid cabinets are placed in every shop, terminal, station, tower, etc.

One day a week is devoted to refilling these cabinets. An inspector is detailed to this mission.

Physical examinations are given to:

1. Prospective employees.
2. Annual periodic, to all employees.
3. Frequent vision and hearing tests.

The medical department is large, and includes, among others:

1. Waiting room.
2. Doctor's office.
3. Surgical examining rooms.
   Equipped to dress wounds or examine patients.
4. Large surgical room.
   Equipped for minor surgery.
5. Eye and ear room—dark—with necessary apparatus.
6. Supply room.
7. X-ray room.
8. Dental room—includes X-ray.
9. Physiotherapy room.
   Divided into compartments—equipped with modern apparatus.
10. Laboratory.
    For blood and urine work.

Mercurochrome is preferred to iodine as a general antiseptic.

The company uses available hospitals for its cases.

Accident prevention measures have been adopted. Safety devices of all types have been introduced, and the men are taught the necessary principles. Following an accident, an investigation is made to determine the cause, and institute immediate correction. Many pamphlets, booklets, etc., are printed for the employees. Lectures are given frequently. Contests are held and prizes given to the winners. The welfare program includes:

Visiting nurses.
Compensation insurance.
Self insurance.
Sick benefit.
Pensions.

Chicago, Rock Island & Pacific Ry.

Chicago, Ill.

This organization employs 46,000.

The medical work is supervised by a chief surgeon, two part time physicians in Chicago, and 500 to 600 doctors along the points of the railroad.

First aid by laymen is left to the discretion of the individual physician for his district. The men are trained, however, in all phases of first aid.

First aid cabinets are placed on all trains—one for freight—two for passenger, and one for each Pullman car.

Physical examinations are given to all new employees with special tests for hearing and vision.

Rest rooms are maintained for female employees, and the welfare program is at present being reorganized.

Medical dispensary at La Salle St. Station.

1. Two doctors' offices.
2. Waiting room.
3. X-ray department.
4. Surgical room.
5. Supply room.
6. Physiotherapy room.

Number of cases daily—20.

Surgery is done at a hospital—with no special choice of such institution. Mercurochrome is preferred to iodine as a general antiseptic.

Cincinnati Milling Machine Co.

Cincinnati, Ohio

This organization employs 1,500.

The medical staff consists of:

2 full time physicians.
1 part time dentist.
2 nurses.

First aid is not administered by laymen. All cases are treated at the dispensary. There are no first aid teams and no first aid cabinets.

Physical examinations are elaborately carried on. Examinations are given to:

All new employees.
All employees—every 6 months.

The medical department consists of:

1. Surgical room—well equipped.
2. Laboratory—for routine examinations.
3. Dark room for eye and ear work—also equipped for detailed examining of patients.
4. Dental office.
5. Record room.
6. Physiotherapy department—modern equipment.
7. Doctors' office.

Minor surgery is performed here—100 cases are treated daily. Both iodine and mercurochrome are replaced by a special antiseptic preparation.

The safety work is supervised by the medical department. Posters, bulletins, lectures, etc., are used. Daily accident reports are submitted to the medical department. Weekly meetings of foremen are arranged to discuss safety and accident matters.

The welfare program includes:

Free insurance to employees
Social service.
Sick benefit fund.
Compensation insurance.
Free X-ray, if necessary.
Athletic competition.
Restaurant—meals at cost.

Delaware and Hudson Company

Albany, N. Y.

This organization employs 17,000. There is no chief surgeon, but in the larger cities and towns practitioners are designated to treat the company's cases. At each shop a first aid room is equipped and operated. At the largest shop of the company, a part time physician is employed to examine men and make daily visits.

Physical examinations are given to new employees, after which the men are examined for vision and hearing every two years.

First aid by the layman is featured. Over 500 employees are holders of certificates, and more are being trained. The men are divided into first aid teams, and some of these teams are reputed to be among the best in the country.

Accident prevention work is being done with excellent results. Injuries and fatalities have been reduced from year to year.

The company designs and makes its own first aid cabinets. These are divided into two classes, one large, which contains blankets as well as supplies, and one small, which contains supplies only. The general antiseptic used is iodine.

Rest rooms are maintained for women at various office buildings.

Delaware, Lackawanna & Western Railroad Co.

New York

This company employs 75,000.

Men are taught in all the branches of first aid—in the operating division and in the shops. Teams are organized and contests are held frequently. About one-third of all the men employed have had first aid training.

First aid cabinets are maintained at all shops and on trains. The first is a large standard type, while the one placed on cars is a smaller type.

The medical staff is headed by a chief surgeon and eight part time physicians at Scranton, Pa., and a large number of physicians on call along the points of the road. The company maintains a hospital at Scranton (Moses Taylor), large and well equipped. Several first aid rooms are maintained at the respective shops.

Physical examinations are given to the new employees, and to all employees every 2 years.

Accident prevention work is carried on through the safety department, by means of lectures, bulletins, etc.

E. I. du Pont de Nemours and Company

Wilmington, Delaware

This organization has about 15,000 employees. Its work is carried on in plants over the entire country. Medical service is

attended by both part and full time physicians, depending on the size and location of the plant.

As an example of the service at one of the largest plants, the procedure at the Dye Works, Penns Grove, N. J., is given.

The number of employees here is 1,500.

The men are trained in the prone pressure method of resuscitation, but are not permitted to administer first aid. There are no first aid cabinets in use.

Physical examinations:

All are examined before employment.
Periodic examinations are compulsory for payroll employees; optional with the salaried employees.
For a plant having special occupational hazards, such as the dye works, here described, the periodic examinations are frequent, depending upon the nature of the work. Some men are examined every week, others every month, others every two or three months, and those least exposed are examined annually.

Rest rooms are maintained in all office buildings where women are employed. All plants contain wash rooms, lockers, etc., for the men.

The welfare program includes the following:

Insurance, without cost to employees.
Care of the tuberculous.
Pensions.
Athletic competition and recreational activities.
Restaurant in plant.

Medical service: Staff: One supervising physician; one assistant, both full time; one full time dentist; one laboratory technician; clerks, attendants, etc.

Number of cases handled, about 500 per week.

Layout and equipment:

The medical department is in a separate building, centrally located and well equipped. Color scheme, tan. The layout includes:

1. Waiting room, with large seating capacity.
2. Surgical room—well equipped.
3. Drug and supply room.
4. Main operating room with an equipment similar to that of a hospital.
5. Hospital ward containing three beds and stretcher. This room is so arranged as to provide easy access for ambulance cases.
6. Doctor's offices (2).

DISPENSARY AND REST ROOM
HAWKEYE WORKS, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

EYE, EAR, NOSE AND THROAT ROOM
GENERAL ELECTRIC WORKS, SCHENECTADY, N. Y.

7. Laboratory for urine analysis, blood work, etc.
8. X-ray room. Equipped with modern apparatus.
9. Physiotherapy room, equipped with bakers, Infra-red lamps, etc.
10. Special examination room. This is divided off in a waiting room; a second room where clothes are removed and specimens are obtained before the subject enters for examination.
11. Dental rooms, equipped with modern apparatus.
12. Female hospital room, adjacent laboratory.
13. Clerks' room for reports, records and filing.

Eastman Kodak Company

Rochester, N. Y.

This organization employs ten to eleven thousand in Rochester, N. Y. The medical organization is extensive and the work is divided among several dispensaries. Both the organization and the equipment are excellent.

First aid by the layman is performed here only in the very remote parts of the plant. No standard first aid cabinets are therefore maintained.

The medical staff consists of three full time and six part time physicians, one part time dentist, eleven nurses, three visiting nurses, two X-ray technicians, one dietitian, and several clerks. Among the physicians are specialists for X-ray, ear, nose and throat, and lung diseases. Two of the dispensaries have a large layout. The first includes:

1. A surgical room.
2. Physicians' examining rooms.
3. Physiotherapy room.
4. Ear, nose and throat room.
5. X-ray department.
6. Laboratory.
7. Oculists' office.
8. Dietitian's office and other departments.

The second dispensary contains:

1. Special surgical rooms for male and female patients.
2. Eye department.
3. Operating room.
4. Dental room.
5. Physiotherapy room.
6. Special examining rooms.
7. Laboratory and other rooms.

The service is very adequate. Only minor surgery is done. The equipment in all the departments is excellent. The general antiseptic preferred is iodine. A physical examination is given at the time of entrance and periodically. This examination is very extensive and thorough.

Other features of this organization which may be mentioned are: the excellent department of dietetics; elaborate X-ray outfit; adequate number of rest rooms for men and women; the rule that requires all employees to show vaccination certificates; the elaborate welfare program, and lastly the stock-sharing privileges accorded employees.

Federal Ship Building and Dry Dock Co.

Kearny, N. J.

The number of people employed is 1,500, with few female employees. The men are not taught first aid, but they are trained in resuscitation. No first aid cabinets are maintained because of the central location of the hospital. The medical staff consists of a part time physician and a male nurse. The layout is large and occupies the entire building. It consists of:

1. Two offices.
2. Waiting room.
3. Main surgical room (for minor surgery only).
4. X-ray department.
5. Laboratory.
6. Hospital room with four beds.

The equipment is very adequate. Iodine is preferred to mercurochrome as a general antiseptic.

General Electric Company

Harrison, N. J.

The number of employees is 1,200 to 1,500, of whom 80% are females. The medical department is supervised by one full time physician and two full time nurses.

Employees are trained in the art of resuscitation, splinting and bandaging, but not in actual treatment of wounds. No first aid cabinets are maintained.

Physical examinations are given:

Upon entering the employ.
Periodic examination of executives.
To those complaining of illness.
The under-nourished, especially the women.

The hospital department is large, and consists of:

1. One waiting room.
2. Doctor's office.
3. Dental room with X-ray outfit.
4. Two surgical rooms.
5. Dietitian's room.
6. X-ray department.
7. Physiotherapy room.
8. Rest room for patients.
9. Supply room.

These rooms are well equipped with modern apparatus.

The number of cases treated are 1,200 per month, of which 60% are medical, in other words, 40 cases a day (of which 25 are new.) The preferred antiseptic is mercurochrome.

Accident prevention is taught on the same basis as in other plants of the Company.

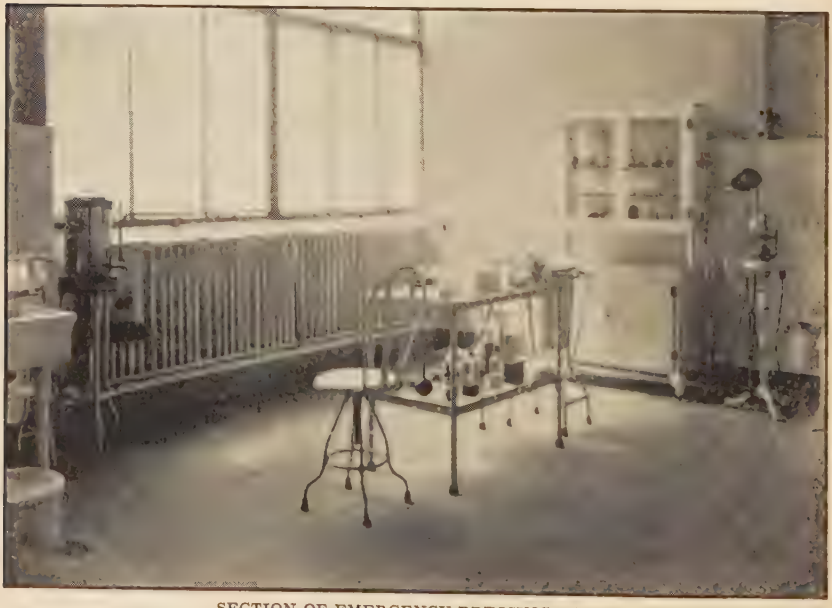
A large welfare program is carried on. This includes visiting nurses, sick benefits, rest period twice daily for all employees, and the building up of the under-nourished with additional food.

General Electric Company

Schenectady, N. Y.

The number of people employed at this plant is 18,000, of whom 2,500 are women. An extensive safety organization is maintained here. The entire plant is divided into 15 sections, each section having its own safety organization; the office force being placed separately. Each section in turn is divided into groups; the committee for each group is chosen by the safety committee. Monthly competition between different floors of this plant are held, the cash awards being given to the Mutual Benefit Association, and placed to the winner's credit. Contests are also held between the inter-departmental groups. A bi-

DRESSING ROOM
GENERAL ELECTRIC WORKS, SCHENECTADY, N. Y.



SECTION OF EMERGENCY DRESSING ROOM
GENERAL ELECTRIC COMPANY, HARRISON, N. J.

monthly publication aids the safety organization materially, by printing safety news of interest.

Records of accidents are kept on various charts in all departments. Bulletin boards assist in this propaganda. Contests are held between different plants to determine the most successful work against frequency and severity of accidents. Reports of accidents for the month are sent to the foreman of each department, and memos are given to all safety men. Photographs of all "bad spots" are taken and the hazards are then removed.

First aid by the layman is not encouraged. There are no first aid teams, and no first aid cabinets.

The medical organization consists of:

Six full time physicians. (One female.)
Ten nurses.

Major surgery is performed at a hospital in Schenectady, where the company maintains an entire ward.

The largest dispensary of the three occupies an entire building. It contains:

1. Waiting room.
2. Six examining rooms.
3. Main surgical room (minor surgery).
4. Special room for eye and ear work.
5. Special room for nose and throat work.
6. Physiotherapy room.
7. Several small surgical rooms for dressings. Each having its own instrument cabinet and supply closet.
8. Sterilizer.
9. X-ray and dark room.
10. Rest room for women.

The dispensary is open day and night, and treats an average of over 300 cases daily. The equipment is complete. The preferred antiseptic is iodine.

Physical examinations are given to all new employees. To all other employees who have been away two weeks or more, examination is also given.

The company conducts an extensive welfare program, which includes: bonuses to employees, recreation of many kinds, publications and restaurants. Rest rooms are maintained, each with a supervising matron.

General Electric Company

West Lynn, Mass.

This plant employs 10,000. The safety organization is conducted on the same basis as the one described in the Schenectady plant.

The medical organization consists of:

Three full time physicians.
One nurse and two attendants.
One X-ray technician.
One physiotherapist.
One laboratory technician.
One dentist.

The medical department occupies the entire building. It is divided into the medical, surgical, dental, etc. Minor surgery is performed here, and major work is sent to a hospital in the town. The rooms are divided into:

1. Dental clinic.
2. X-ray department.
3. Ophthalmology clinic.
4. Laboratory.
5. Main surgical room.
6. Operating room for minor surgery.
7. Diathermy and massage room.
8. Two rest rooms.
9. Female surgical room.
10. Three medical examining rooms.

The number of cases treated average 250 to 300 daily. The equipment is excellent, and the service very active.

First aid teams are organized and trained. Men are chosen from various buildings to receive first aid training.

Glen Alden Coal Co.

Scranton, Pa.

This company (owned by Lackawanna R. R.) employs 30,000. The medical staff consists of:

Chief surgeon.
8 part time physicians.
2 hospital internes.

The company controls the Moses Taylor Hospital, and all cases are brought to this hospital.

No physical examinations are given to new employees. They are examined, however, when complaining of illness.

Emergency rooms at the mines are numerous. Each shaft and colliery has a first aid room at its terminal. Each room contains a cot, stretcher, blanket, medical and surgical supplies. When a man is injured, he is immediately taken to the nearest room, and is attended by a fellow worker who has had first aid training. The physician is then summoned. If the latter is not available, the case is taken to the hospital. An entire ward at the hospital is devoted to company cases.

Goodyear Tire and Rubber Co.

Akron, Ohio

This organization employs 18,000, of whom 2,000 are females. The medical equipment consists of six full time physicians, one dentist and fifteen nurses.

Physical examinations are given:

To new employees.
To executives at intervals.
Periodic examination, 5 year intervals, to all employees.
When complaining of illness or injury.
When changing from one kind of work to another.

First aid is not administered by laymen. There are no first aid teams and no cabinets.

The medical department is open day and night, every day of the year. Doctors are on call when away from the plant. This department is large, and treats 1,000 cases a day. It is complete in all respects; major surgery is performed here.

The department is divided into:

1. Waiting room. (Capacity 125 people.)
2. Main surgical room.
3. X-ray department.
4. Doctor's offices and examining rooms. (5 in number.)
5. Physiotherapy department. (Divided into two sections.)
6. Hospital rest room for men (4 beds).
7. Hospital rest room for women (6 beds).
8. Dental room and waiting room. (With X-ray and other equipment.)

9. Rest room for women, with attached surgical room. (12 cots, double doors, hidden lights.)
10. Operating room for major surgery.
11. Operating room for minor surgery and infected cases.
12. Department of dietetics.
13. Eye, ear, nose and throat department. (Dark room.)
14. Hospital ward for men. (10 beds.)
15. Hospital ward for women.
16. Supply room.
17. Examining room for injured employees.
18. Special examining room for executives.

Among the many features, the following are noteworthy:

There is no record of a single infection that followed the initial treatment of a clean wound in this dispensary.

The service is very large and the dispensary is open all year round, day and night, Sundays and holidays.

1,000 cases are treated daily.

Completely furnished hospital.

Sterilization of water by the ultra violet rays.

Abundance of rest rooms with double doors and hidden lights to promote quiet, silence and rest.

A large department of dietetics.

Dental service with excellent equipment.

X-ray apparatus.

Full equipment in physiotherapy department.

A zoning system by which the employee is referred to the physician nearest to his or her home in case of illness.

This organization conducts an extensive welfare program. Among the features may be mentioned:

1. Social workers.
2. Relief association.
3. Club building. Devoted to recreation, containing club rooms, gymnasium, theater (where both actors and audience are employees), school rooms for instruction in various courses to promote advancement for employees.
4. University maintained, where many employees may enroll upon the payment of a very small fee. The courses are not confined to the rubber industry alone, but cover literature, law, engineering, etc. This University is recognized by many of the educational institutions in the country.

5. Special recreation rooms, one each for men and women used for dances, card parties, etc.
6. Several restaurants maintained for the employees. There is a restaurant for the office force and one for the laborers. In both instances the food is given at cost.
7. Extensive accident prevention work is carried on by means of posters, signs, booklets, newspapers, lectures, etc.

Hammermill Paper Co.

Erie, Pa.

The number of people employed is 1,300, of whom 225 are women. The medical work is supervised by a part time physician and a full time nurse. The number of cases treated daily averages 15.

No first aid training is given to employees, and only three first aid cabinets are kept on the grounds. The general antiseptic used is mercurochrome.

Physical examinations are given to new employees, and to all who complain of illness.

The dispensary is maintained in a separate building. The layout is adequate, and consists of:

1. Waiting room.
2. Doctor's office.
3. Main surgical room.
4. Supply room.
5. Rest room.

Illinois Central Railroad Co.

Chicago, Ill.

This organization employs 80,000, of whom 50,000 are in and around Chicago.

The company maintains one large hospital in Chicago, and eight dispensaries in other cities. A chief surgeon and his associate are in Chicago, while 740 physicians are on call at various points along the road.

Chosen men are trained in the various phases of first aid, especially in the methods of resuscitation. First aid cabinets are of a special type designed by the company, and contain packages for wounds of all kinds—but no antiseptic. These are placed on

all trains—one to a car. The preferred antiseptic is mercurochrome.

Illinois Central Hospital—*Chicago*

Number of beds, 170; all services. Staff consists of 5 visiting physicians and 3 resident physicians for dispensary; 15 visiting physicians and 8 resident physicians for general hospital work.

Four of the physicians devote their time to ear, eye, nose and throat work.

Number of cases in dispensary—50 daily.

The hospital is large and well equipped. The dispensary department consists of:

1. Waiting room.
2. Main surgical room—outfitted for minor surgery.

All other work, such as X-ray, physiotherapy, etc., is done in the hospital division.

Illinois Steel Corporation

Chicago, Ill.

The number of people employed are 80,000, scattered in several plants in and around Chicago. Numerous dispensaries are maintained in all plants, and because of their accessibility, the employees are not trained in first aid matters. No first aid cabinets are maintained, except at the mines. Mercurochrome is preferred to iodine as a general antiseptic.

The medical organization is extensive. A chief surgeon presides in Chicago, and one or more surgeons attend to each dispensary. In each instance there is a full time physician. At South Chicago a hospital is maintained. The dispensaries are open day and night and the company maintains its own ambulance service.

This company carries on an extensive welfare program, and also provides numerous rest rooms for its employees. Preventive measures are adopted, and accident-prevention campaigns are encouraged.

Indiana Steel Corporation

Gary, Indiana

The company hospital occupies an entire building, and contains 120 to 150 beds. Its staff consists of four full time physicians and eight to ten nurses.

A dispensary or out-patient department is maintained, in which 250 cases are treated daily. The layout consists of:

1. Large waiting room.
2. Surgical room.
3. X-ray department.
4. Hydrotherapy room.
5. Physiotherapy room.
6. Laboratory.
7. Receiving room for new patients.

The hospital department consists of three main wards. The most common lesions encountered are fractures and burns, but all types of surgery are done here in cases where the lesion was directly or indirectly caused by the work at the plant. A sun porch is kept for convalescing patients, and the various departments mentioned above (physiotherapy, hydrotherapy, X-ray, laboratory, etc.) are at the disposal of the patients.

International Harvester Co.

Chicago, Ill.

This organization employs 10,000 in Chicago.

The medical organization consists of:

2 full time physicians.
3 part time physicians.
2 part time dentists.
3 nurses.
2 social service workers.

First aid by the laymen is not general. No first aid teams organized. First aid boxes are kept in each plant for use at night.

The main dispensary treats 100 to 150 daily, and contains:

1. Waiting room.
2. Main surgical room—minor surgery.

RECEPTION ROOM, FIRST AID HOSPITAL
McCORMACK WORKS, INTERNATIONAL HARVESTER COMPANY, CHICAGO, ILL.

DISPENSARY, FIRST AID HOSPITAL
McCORMACK WORKS, INTERNATIONAL HARVESTER COMPANY, CHICAGO, ILL.

3. Physiotherapy room.
4. Examining booths.
5. Laboratory.
6. Three examining rooms.
7. X-ray department.
8. Hospital rest room.
9. Eye room.

A smaller dispensary—single room—is maintained in a remote part of the plant.

The preferred antiseptic is mercurochrome.

Major surgical work is sent to the Chicago hospitals.

Physical examinations are given:

To all new employees.
Annually to executives.
To all, when complaining of illness.

Accident prevention and safety campaigns are carried on. Posters and bulletin boards are used and lectures are given.

Welfare programs include club rooms, social workers, compensation insurance, pensions, etc. Rest rooms are maintained for female employees.

Long Island Railroad Co.

New York

This company employs 11,000.

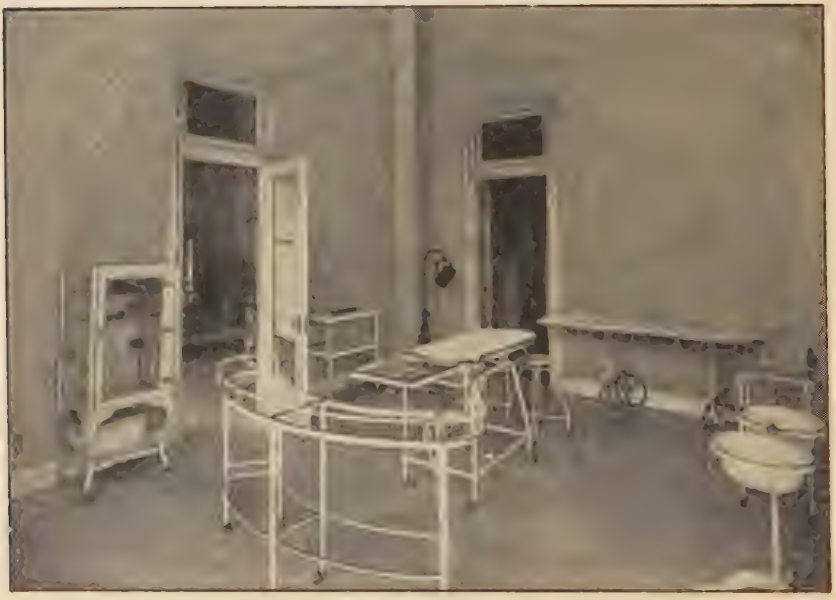
First aid is taught to as many men as possible. Teams are organized at many places. First aid cabinets are maintained at many points, including shops, towers, stations, cabooses, etc.

Accident prevention and safety practices are taught through seven safety organizations. Because of this vigilance, casualties have been cut 50% in the last 8 years. Literature, bulletins, etc., are issued frequently to aid in this safety campaign.

Several first aid rooms have been established. The largest one, at Morris Park, is under the supervision of two part time physicians and a male nurse. This dispensary consists of two rooms adequately equipped. Iodine is preferred as a general antiseptic.

Physical examinations are given to new employees, and to other employees when necessary.

ECONOMICAL DISPENSARY FOR MEDIUM SIZED PLANT
JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.



OPERATING ROOM
NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO

National Cash Register Co.

Dayton, Ohio

The medical and welfare services of this company cover extensive fields.

Number employees, 7,000; number female employees, 700.

Medical Staff:

1 Company physician—full time.
1 consulting surgeon.
1 full time dentist.
4 registered nurses.
2 physiotherapy attendants.
1 masseuse.

Hospital for major cases: Miami Valley, Dayton, Ohio.

Company maintains its own ambulance service.

Physical examinations:

All new employees.
Those complaining of illness.
Food handlers semi-annually.
Executives semi-annually.
By voluntary application—at any time.
Those found to be ten or more pounds under weight.
Free access to dental department.

No first aid by laymen. First aid cabinets rarely used.

Medical Department includes:

1. Waiting room of ample capacity, with nurses' and clerks' desks. Doors lead from this room to all rooms and divisions.
2. Doctor's office.
3. First aid room.
4. Operating room—equipped for minor surgery and eye work.
5. Hospital rest room.
6. Nurses' dressing room.
7. Physical examination room. Contains 5 booths.
8. X-ray room.
9. Physiotherapy and hydrotherapy department, well equipped, and includes a colonic room.
10. Physiotherapy—female—equipped as above.
11. Dental Department.

DENTAL ROOM
NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO

FIRST AID ROOM AND DISPENSARY
NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO

Number of cases, 1926: 150 to 200 daily. 3,432 new employees examined; 3,921 physical examinations; 329 laboratory tests were made, including urinalysis, blood counts, sputum examination, etc.; 25,392 treated; 3,400 calls by visiting nurse; 12,291 physiotherapy treatments; 8,200 dental treatments.

Total for year 1926: 50,000. Average per month: 4,200.

Mercurochrome is preferred to iodine as a general antiseptic.

Welfare—among the features are:

Visiting nurse.
Rest rooms.
Restaurants for employees where meals are served below cost.
Free access to medical and dental departments on company's time.
Club houses for community welfare.
Prizes for worthy suggestions by employees.
Improvements in comfort during working hours.
Library for employees.
Profit sharing privileges extended to employees.
The N. C. R. School House—seats 2,500 people.
Motion pictures and other forms of entertainment are given each noon. The room is also used for conventions, meetings of employees, entertainments, lectures, etc.
Entertainments are given to the children of Dayton, every Saturday morning.
Continuation school—for students of neighboring high schools and colleges.
Night classes for employees. The average attendance is 1,000. The classes are given to both men and women.
Relief association with benefits to employees at low premiums.
Gardening classes for boys and girls. Other privileges extended to the employees' families.
Community spirit cultivated and promoted through various methods.
The publication "N. C. R. News."
Athletic and outdoor activities.

Safety Department:

Safety director—with office located in medical department, where he is in close touch with all injury cases.
Central safety committee composed of eight members—foremen and supervisors.
Safety Education
- Bulletins.
- Lectures.
- Booklets.
- Illustrated slides.
- Accident reports.

Mechanical guards on dangerous machinery.

PHYSIOTHERAPY ROOM
NATIONAL CASH REGISTER COMPANY, DAYTON, OHIO

PHYSIOTHERAPY ROOM
NEW DEPARTURE MANUFACTURING COMPANY, BRISTOL, CONN.

Fire protection—in conjunction with fire chief.
Workmen's compensation. Report all injuries to State Industrial Board.
Records of time lost—expenses due to injuries.
Records of time lost due to sickness.

New Departure Manufacturing Company

(General Motors)

Bristol, Connecticut

The number of employees in this plant are 3,400 men and 400 women.

The medical staff consists of:

1 full time physician.
3 nurses—2 dental
1 visiting dentist.
3 male nurses.
1 X-ray technician.

The medical department is open day and night. The number of cases are 100 per day, 40 of them being new cases.

The color scheme is white. A feature of this department is the ample space allotted to the various treatment rooms as well as the excellent equipment.

1. Main waiting room—ample seating capacity.
2. Offices—employment and personnel.
3. Doctor's office.
4. Examination room—3 open booths.
5. Rest room.
6. Surgical room (for dressings).
7. Main surgical room—for minor surgery only.
8. Hospital room (for overnight stay)—2 hospital beds.
9. X-ray and dark room.
10. Physiotherapy room—4 to 5 stalls.
11. Dental department—two outfits.

Physical examinations:

When entering employ.
When complaining of illness.

First aid is not performed by the layman. There are no first aid cabinets.

DISPENSARY AND DRESSING ROOM
NEW DEPARTURE MANUFACTURING COMPANY, BRISTOL, CONN

PHYSICAL EXAMINATION ROOM
NEW DEPARTURE MANUFACTURING COMPANY, BRISTOL, CONN.

Welfare:

Insurance.
Company stock.
Benefits.
Athletic activities.
Recreational activities.

New York Central Lines

New York

This organization employs 175,000.
The medical organization consists of:

6 chief surgeons.
5 assistant chief surgeons.
51 oculists.
575 local physicians at various points.
2 emergency hospitals.
20 first aid rooms, each with nurse in charge.
191 hospitals which care for the company's cases.

Employees are thoroughly trained in first aid. Men on the electric trains are especially drilled in the art of resuscitation. First aid instructions are posted in placard form at all terminals, shops, etc. Stretchers and U. S. A. litters are placed on all trains, stations, etc.

First aid cabinets are placed on all passenger coaches and cabooses. Combination and baggage cars have two of these kits. Each kit contains:

1 web tourniquet.
1 packet with 3-inch gauze bandage.
6 packets each with one 2-inch compress bandage.
3 cartons each with two 3-inch compress bandages.

Physical examinations are given to:

New employees.
All employees every 5 years, if under 40.
All employees every 3 years, if 40 to 45.
All employees every 2 years, if 45 to 50.
All employees annually, if over 50.

A large safety organization takes care of the accident prevention work. Unsafe practices are reported and corrected. Safety committees are designated for all divisions of the company. Frequent meetings for the employees are held. The motion picture, radio and numerous publications are used to aid in this work.

FIRST AID ROOM
NEW DEPARTURE MANUFACTURING COMPANY, BRISTOL, CONN.

MAIN DISPENSARY
NORTON COMPANY, WORCESTER, MASS.

The welfare program includes:

Athletic competition.
Social affairs.
Club rooms.
Picnics and field days.
Relief association.
Mutual benefit insurance.
Cooperative building and loan association.
Pensions.

The Y. M. C. A. maintains lounging rooms for the men. All stations have rest rooms for the female employees.

NEW YORK CENTRAL R. R.—*West Albany Shops*

Cares for 3,000 to 4,000 men. Number of cases daily—40.
The medical staff consists of:

Chief surgeon.
1 full time physician.
1 full time nurse.

The hospital consists of:

1. Waiting room.
2. Surgical room—well equipped.
3. Hospital room.
4. Nurses' office.
5. Doctors' office.

The preferred antiseptic is mercurochrome.
A hospital in Albany is employed for all major cases.

NEW YORK CENTRAL R. R.—*Selkirk Shops*

Cares for 1,000 men.
The work is supervised by a part time physician, and a full time nurse. The hospital consists of a surgical room (well equipped) and a hospital room. Number of cases daily—25. All major cases are taken to a hospital in Albany, N. Y. The chief surgeon in the district takes charge of the case.

New York, New Haven and Hartford Railroad Company

New Haven, Conn.

This organization employs 50,000. Physicians are designated in towns to which the work extends. Emergency hospitals are maintained in various locations along the roads. Physicians make calls daily, depending on the size of these hospitals. First

aid cabinets are maintained in the shops, while smaller types are kept on baggage and passenger cars. The general antiseptic used is iodine.

EMERGENCY HOSPITAL AT TERMINAL IN NEW HAVEN, CONN.

This hospital treats on an average of twelve cases a day. It is supervised by a full time nurse and a part time physician. The surgical room is large and well equipped with modern apparatus and appliances.

READVILLE, MASS., SHOPS

The number of employees here are 2,800. The emergency hospital is placed in charge of a full time nurse and a part time physician. The number of cases treated per day are about 125, of which 25 are new. First aid cabinets are maintained on the grounds for use at night. The severely injured cases are sent to a hospital in town. The surgical room is well equipped for a large number of cases treated, and an active service is maintained.

Norton Grinding Co.

Worcester, Mass.

This organization employs 2,600 to 3,000.
The medical staff consists of:

One full time physician.
Two part time physicians.
One dentist.

There are two dispensaries—one large and one small.
The number of cases treated daily—200.
Physical examinations are given to:

1. New employees.
2. Executives annually.
3. All every 5 years—if previously ill.

There is no first aid by laymen. No first aid teams are organized. There are 8 first aid outfits scattered over the grounds, each containing 4 blankets and a stretcher, and first aid supplies.
Central Dispensary:

1. Dental room.
2. Waiting room.

3. Examining booths.
4. Main surgical room—divided off to accommodate different injuries.
   a. Eye and ear—dark room partitioned off from main room.
   b. Nose and throat section.
   c. Hand and foot section.
5. Hospital room—for seriously injured.
6. X-ray room.
7. Laboratory.
8. Rest rooms for women.
9. Filing department.
10. Female surgical division.

Safety Measures:

Publications, posters, bulletins, etc.
Men are transferred about to different forms of work to prevent Pneumonoconiosis.

Accidents have been reduced to a very low rate.

The company conducts a large welfare program. Included in this are:

1. Selling of homes to employees at cost.
2. Athletic competition.
3. Community stores.
4. Special bureau for assistance to employees on legal matters, etc.

The New York Telephone Company

American Telephone and Telegraph Co.

New York, N. Y.

This organization employs 64,000. Like the other telephone companies, first aid is important. From 2,500 to 4,000 are taught first aid every winter. They are taught along the lines recommended by and under the supervision of the American Red Cross. First aid cabinets and kits are used in sufficient quantities. They are of the same type as described in the paragraph devoted to the American Telephone & Telegraph Co., and are kept in suitable locations.

Special attention is given to the female employees. A number of rest rooms are maintained for their use. Various courses in personal hygiene are given. The medical division is extensive,

and consists both of the medical department proper and a consultants service.

The equipment is excellent and adequate, including modern X-ray facilities. Separate rooms are provided for treating accident-on-duty surgical cases. Periodic physical examinations are offered to all employees.

Packard Motor Car Co.

Detroit, Mich.

This company employs 10,000 of which only 800 are women. The medical staff consists of:

Two full time physicians.
One part time physician.
Three full time nurses.
One nurse for night duty.

The hospital department consists of:

1. Large surgical room—equipped for general work and special work.
2. Doctors' office.
3. X-ray room.
4. Hospital room—for temporary use.
5. Operating room—for minor surgery only.
6. Examining room—divided off into several booths.

First aid training of laymen is avoided. No first aid cabinets are maintained. Iodine is preferred as the general antiseptic.

Physical examinations are given to new employees. Rest rooms are maintained for women in various parts of the building.

Pennsylvania Railroad Company

Philadelphia, Pa.

This organization employs 220,000. Its medical organization is very large. It consists of:

One chief surgeon.
Sixty medical examiners.
Two hundred and twenty company surgeons at various points.
Six hundred and eighty physicians on call in various towns.
Five dentists.

The company does not own any hospital, but designates certain hospitals in the larger cities for the care of its patients.

First aid is taught to laymen, but these are not expected to attend to injuries, unless a physician or nurse is not available. Two types of first aid boxes are maintained.

1. First aid packets, on trains.
2. First aid cabinets, at shops and stations.

Mercurochrome is preferred to iodine as a general antiseptic.

Dispensaries are maintained at shops, freight yards and stations. These are supervised by physicians, male and female nurses, and employees who have had first aid training.

The company examines all new employees and also special workers such as signal men, light men, motormen and all employees who depend on the special senses—annually for those over forty, and every two years under forty years of age.

The medical department at the office of the chief surgeon consists of doctors' offices, rooms for injured employees, and a large surgical room.

At the Broad Street Station at Philadelphia, the medical department averages 75 cases daily. This department is supervised by three full time physicians, one nurse and one night physician. In this department both iodine and mercurochrome are used, but the latter is preferred. The layout consists of several offices, a rest room for women, and a surgical room with suitable equipment.

At the West Philadelphia shop the dispensary is supervised by a male nurse, with a physician making daily calls. The emergency room is suitably equipped and first aid cabinets are maintained on the grounds.

The Philadelphia Electric Co.

Philadelphia, Pa.

This organization employs approximately 7,000, of whom 800 are females. The medical service is in charge of one chief surgeon, seven part time physicians, and the work is divided among three dispensaries.

First aid by the layman is considered highly important. Men are chosen and taught the methods of resuscitation, and incidentally the treatment of wounds. There are no organized first aid teams, but the arrangement is such that in each group of

workers, there is always at least one man who has had first aid training.

There are four types of first aid cabinets. These are:

1. Pocket size, carried by men on individual jobs.
2. A larger type for use by construction and installation gangs at work on one job.
3. A larger wooden type made by the company for use at substations and shops.
4. A still larger type distributed among power houses, and places where a large number of men are employed at one job.

The Company sends injured cases to the nearest hospital. Physical examinations are given:

Upon entering the employ.
At request of employee.
Whenever complaining of illness.
Periodic examinations for linemen and chauffeurs.

An extensive welfare program is carried on for the employees among which could be listed:

1. Employees' beneficial association.
2. Service annuities.
3. Recreation center for athletic activities.
4. Restaurants.
5. Educational opportunities—library.

Rest rooms are maintained for women in all of the office buildings.

Accident prevention is well organized. Lectures are given to the employees on this subject throughout the year, and prizes are offered to the employees for the discovery of unsafe places and unsafe practices, and the suggestions for the solution of these problems. Posters, bulletins and lectures are devoted to accident prevention.

The central dispensary is located in the main building under the supervision of a chief medical director, two part time physicians and one full time nurse and office clerk.

The dispensary consists of:

1. Waiting room.
2. Examination room.
3. Main clinic dispensary room.
4. Consultation room.

The general antiseptics used are iodine and mercurochrome.

Pratt & Letchworth Co.

Buffalo, N. Y.

The number of employees is approximately 1,000 with very few females employed.

The medical work is performed by a full time physician. All cases are sent to the dispensary, and first aid by the layman is prohibited. There are no first aid cabinets.

Physical examinations:

1. Upon entering employ.
2. When ill.

Medical department:

1. Examination room.
2. Hospital rest room.
3. Surgical room.

The number of cases treated daily—10.

The new medical department is at present under construction. It will provide larger and increased facilities.

The welfare program for the employees includes:

Rest rooms for women.
Restaurants for employees.
Forms of recreation.

A safety program is conducted on a large scale. Lectures are given frequently and bulletins are distributed freely. The number of injuries have been reduced to a negligible size, and no infections were encountered in the last two years.

The Pullman Company

Chicago, Ill.

This organization employs 30,000 men, of whom 10,000 are located in shops. The medical organization is headed by a chief surgeon, and three assistants, at the main shop in Pullman, Ill. Physicians are designated in all towns, and are called upon when an emergency arises.

The company operates eight plants or shops, each of which is equipped with a dispensary, the largest one having one full time

EMERGENCY DRESSING ROOM
RICHMOND SHOPS, THE PULLMAN COMPANY, PULLMAN, ILL.

MAIN DRESSING ROOM, CAR WORKS DISPENSARY
THE PULLMAN COMPANY, PULLMAN, ILL.

and two part time physicians in attendance. In the smaller shops the dispensaries are supervised by nurses, with designated physicians on call. The yards and cars are equipped with first aid cabinets. In the former a special type designed by the chief surgeon, is used. Those placed on the Pullman cars are smaller, with contents confined to bandage compresses, spirits of ammonia and mercurochrome ampoules. The latter is preferred as a general antiseptic to iodine.

Except in the shops, where dispensaries are near at hand, first aid is taught to a number of the men. This is especially evident in the operating division, where porters and others are trained in all the methods of aid to the injured. An intensive accident prevention campaign is carried on.

This organization is far advanced in the methods of physical examination of employees. Some men are examined only upon entering, porters are examined annually. Food handlers are examined every three months, lead workers and those employed in dusty trades, are examined monthly.

The largest shop maintained by this organization is located at Pullman, Ill. Here 7,000 people are employed. The dispensary is supervised by one full time and two part time physicians. X-ray, physiotherapy and dental rooms are maintained along with surgical room, eye examination room, etc. Minor surgery is done here.

The welfare program conducted by this company is large.

U. S. Bureau of Mines

Washington, D. C.

This Bureau carries on an extensive accident prevention campaign. It also acts as an authoritative source in reference to health, sanitation and medical service at the mines.

The Bureau of Mines sends out 11 cars with 2 or 3 men on each, that tour the country and lecture to the miners on first aid. The Bureau also maintains 10 branch safety stations in the United States, from which representatives go to nearby plants and instruct the workers in first aid. The length of the course is one week, 5 classes of 3 hours each, at the end of which time certificates are granted to those who are thought to have learned the necessary facts. The Bureau also publishes a manual on first aid.

FIRST AID ROOM
RICHMOND SHOPS, THE PULLMAN COMPANY, PULLMAN, ILL.

OCULIST'S ROOM
THE PULLMAN COMPANY, PULLMAN, ILL.

Because of the existing conditions, only about one eighteenth to one twentieth of the miners are receiving first aid training.

The medical facilities at mines vary considerably, depending on the individual choice of the mine owner or miners (where the medical care is provided by the miners' organization). They range from the first aid cabinet to the hospital. Some companies assess the employees to pay for medical service. Other companies employ physicians on the salary basis.

The Bureau advocates the use of two cabinets. The small type, which is of pocket size, contains the triangular bandage, picric acid gauze and two 1-inch bandages. These are distributed free of charge to the miners. The larger type has a sufficient amount of supplies to serve 100 men.

As to physical examinations, the Bureau recommends:

1. Examination upon entering employ.
2. Periodic examination at least annually.
3. Special examination for employees who are at work in the more hazardous places, such as silicate workers, etc.

First Aid and its Value

Suggestions by U. S. Bureau of Mines

The early care of an injured person is an important factor in their recovery. Due to this, systematic methods for caring for the injured have been developed, and the need for training for the care of such injured has been found to be of major importance in many industries, especially in the mining industry. First aid to the injured has been defined as the temporary care of an injured person by simple, common-sense methods, easily applied by a layman and based on the principles of medicine and surgery.

These include the treatment of:

1. Surgical shock.
2. Asphyxia.
   (a) Electric shock.
   (b) Apparent drowning.
   (c) Poisonous gases.
3. Open wounds.
4. Bleeding.
5. Dislocations.
6. Fractures.
7. Burns.
8. Poisoning.
9. Transportation of the injured.

The U. S. Bureau of Mines since 1910 has trained 160,000 miners in such methods. 24,175 were trained last year, and the number is increasing. Contests between teams in the same line and between teams of different lines are encouraged. The rating is based on the following:

1. The most important thing to do first.
2. Arterial bleeding.
3. Shock.
4. Artificial respiration.
5. Splinting.
6. Bandaging.
7. Aseptic handling.
8. Cleanliness of first aid material.
9. Stretcher and its use.
10. Rapidity and smoothness of work.
11. Careful handling of patient.
12. Part played by the patient.
13. The arranging of the materials.
14. The location of the injury and the treatment.

It is noteworthy to state that the winning team generally obtains a grade over 95, and the next two teams are not far behind.

The real value of first aid, however, is not in being able to compete successfully in contests, but to be prepared to care for the injured, and in being trained to think more safely. Men trained in first aid do not get injured as often, they are the more careful men.

U. S. Government Printing Office

Washington, D. C.

The employees number 4,000 to 8,000.

First aid by laymen is not practiced—hence there is no training of employees in first aid, and there are no first aid cabinets.

The medical service is supervised by:

One day physician.
One night physician.
Two day nurses.
Two night nurses.

The number of cases treated in 1925 were 13,400.

Physical examinations are given to all new employees, and to other employees when complaining of illness.

The dispensary is large and well equipped. It is divided into male and female divisions.

Male and Female.

1. Waiting room.
2. Surgical room—also used for dental, eye, ear, nose and throat work.

Female Division.

3. Physiotherapy room—with all modern apparatus.
4. Doctors' office.
5. Eye examining room.
6. Large rest room—divided off into cubicles—each compartment containing a bed.
7. Bath room.

Male Division.

8. Physiotherapy room—well equipped—divided into several compartments—each containing a table besides apparatus.
9. Bath room.

The welfare program is large—recreation in all forms is given. Rest rooms and restaurants are at the disposal of the employees.

U. S. Steel Corporation

New York

This organization employs about 260,000. The company operates eleven base hospitals at various parts of the country, and 383 emergency stations. There are also 58 training stations for first aid work and 21,731 employees have had first aid training, supervised by 202 safety inspectors. About 40 men are trained at a time.

The number of physicians employed are 233 full time and 117 part time. In addition to these, there are 251 nurses, 110 orderlies and 62 visiting nurses.

The question of physical examination is quite important. From 150,000 to 175,000 employees are examined annually.

The safety and accident prevention work is very strongly accentuated. Safety first campaigns are carried on at all times. All employees are trained to do things safely.

The largest hospitals of this organization are located at Gary, Ind.; South Chicago, Ill.; Buffington, Ind.; Milwaukee, Wis.; Joliet, Ill.; Fairfield, Ala.

Insurance Companies

American Mutual Liability Insurance Co.

Boston, Mass.

This large organization also maintains a medical department. The cases are composed of its policy holders and their employees. It renders advice in reference to medical equipment, to its policy holders.

The medical staff consists of:

1 part time physician.
25 specialists—called in when necessary.

The medical department is large and consists of:

1. Waiting room.
2. Large surgical room—well equipped.
3. Several rooms partitioned off from the surgical room.
   a. Consultation room—also used for physical examinations.
   b. Physiotherapy room.
   c. Several examining booths.

Maryland Casualty Company

Baltimore, Md.

About 1,000 people are employed at the home office—of which 800 are females.

The officials of this company are on record as against first aid by the layman. Opposition is also voiced against the standard first aid cabinet.

This company conducts a very extensive welfare program for its employees. Accident prevention work and safety programs are also carried on actively.

Physical examinations are given to:

New employees.
Those complaining of illness.
Executives—annually.

Records of all employees, especially in reference to illness and physical condition, are kept in code form.

The medical staff at the home office consists of:

Chief surgeon.
Two part time physicians.
Two dentists—day and night duty, respectively.

The dispensary receives about 50 cases daily for treatment. The layout is extensive.

1. Waiting room.
2. Office.
3. Chief surgeon's office.
4. Surgical room.
5. Dental office.
6. X-ray.
7. Rest room for women.

All rooms are well equipped.
The general antiseptic preferred is mercurochrome.

Metropolitan Life Insurance Co.

New York

This organization employs 30,000. The company not only is a model for the medical care of its employees, but also does extensive work in advising industries of all types as to how to equip themselves, and the kind of service to adopt. It also renders advice with reference to the training of first aid teams.

The home office employs 9,000 to 10,000 people. The home medical organization consists of one full time physician and 15 part time (male and female). Only emergency work is done in the medical department at this office.

Physical examinations are given to all new employees and to all employees annually. Those who appear under-nourished are given additional nourishment twice daily. The medical service is divided into:

Surgical division.
Medical rest room.
Physical examination division.
Sanitarium.
Visiting Nurses' Bureau (15 nurses).

There are 500 district offices of this company throughout the country. There are also 700 physicians in the employ of the company.

The medical department has a large out-patient service in New York City. The cases number 400 a day. Among the clinics are:

Eye clinic.
Ear, nose and throat clinic.
Gastro-intestinal clinic.
Metabolic clinics (including blood analysis).
X-ray clinic.
Nutritional.
Dental clinic.
Thyroid clinic.
Over-weight clinic.
Postural.
Physiotherapy clinic

These clinics are independent of the space devoted to physical examinations and to emergency treatment of wounds.

This organization carries an extensive welfare program for its employees. The main features of this program are:

Group insurance.
Abundant rest rooms.
Free hot lunches.
Five working days a week.
Free life insurance.
A pension of two-thirds of salary for life (for the aged or incapacitated).
Community stores with discounts.
Evening improvement studies.
Social activities. (Glee club, band, choral society, etc.)

First Aid Rooms in Small Plants

Suggestions by the Metropolitan Life Insurance Co. Bureaus

Location:

The room should be at least 100 and possibly 200 square feet in area, easily accessible and private. Heat, light and ventilation are necessary. The interior finish for the walls should be of plain white or gray, and the floors of some impervious material such as linoleum, tile, etc. Running water, both hot and cold, is essential.

Equipment:

The equipment should be simple. The following are necessary:

Couch.
Two dark blankets.
Pillow.

Table for dressings.
Two chairs.
Drinking water with cups.
Waste pail (covered).
Two enamel basins.

The first aid cabinet should contain:

Tincture of iodine in ampoules.
Bandage and sterile dressings.
Tourniquet.
Spirits of ammonia.
Adhesive tape.
Safety pins.

The dressings should be of the individually packed type. Scissors, towels and soap are essential. It is necessary to impress upon the person in charge, that maintaining the equipment is of utmost importance, and replacements of article should be done immediately.

The successful treatment of injuries does not depend on elaborate equipment or large staff, but on the proper treatment of employees at all times. The patient should be treated in the same manner that he would be if he reported to an outside physician.

All plants, no matter how small, should provide for the prompt treatment of all injuries. If it is impossible to set aside a room for that purpose, supplies can be maintained in one of the offices for the temporary treatment of injuries. These should include:

Iodine solution.
Gauze.
Bandages.
Adhesive tape.
Pair of scissors.
Tourniquet.

Or, a first aid cabinet can be maintained. A stretcher on the premises is advisable.

The person in charge of the first aid equipment should at least know how to apply the tourniquet, and how to administer Schaeffer's method of artificial respiration. A card of instructions should be displayed explaining the necessary treatment for various injuries, bearing in mind, however, that the first aid man is not to perform surgery nor is he to administer medicine by

mouth. It is, therefore, inadvisable to keep medicines on hand.

In a shop of moderate size, a large and well lighted room should be set aside for this purpose. At least one basin with running hot and cold water, a foot tub, dressing table, instrument case, waste pail, foot-rest and chairs, are essential. Adjustable light for eye examination is recommended. A stretcher and a supply closet are also advisable. Where there are women employees, a rest room should be maintained for them near the dispensary, simply furnished with two cots, screen, wash basin and adjoining toilet.

The dispensary should have a registered nurse in attendance at all times. If there is a night shift, a night nurse should be on hand. The nurse should take care of all the records. Once a month these records should be summarized in a report, throwing light on the number and types of injuries in various departments.

The doctor should make calls every day to see new patients, and do the more serious work. He should give forth routine treatment for wounds of all types and this information should be printed and a card hung up in view. The equipment in reference to instruments is left to the discretion of the doctor.

In the larger industries the full time physician is an integral part of the organization. He supervises physical examination, cooperates with the safety department and thus lessens the risk of employing physically unfit men, and also lost time in compensation. Any plant employing 1,000 or more can profitably engage a full time doctor, and in many instances 500 will require one. This plant should have at least:

1. A rest room for injured men.
2. Doctor's office.
3. Clerk's office.
4. X-ray equipment.
5. Room for physical examination with necessary equipment such as eye charts, scales, etc.

Utica Mutual Insurance Company

Utica, N. Y.

The company furnishes first aid rooms for its policy holders, and supplies them with nurses, if necessary, according to the New York Compensation Inspection Rating Board rules. The

company directs that first aid treatments be given only by doctors and nurses, and that laymen confine themselves to resuscitation.

The company maintains its own hospital (Faxton Hospital, Utica, N. Y.).

The company recommends to its policy holders:

A first aid outfit in all first aid rooms.
Physical examinations of new employees.
Annual re-examinations of all employees.

Medical Service requirements:

30-40 employees require first aid room.
Over 150 require full time nurse.
75 or more require part time physician.
500 or more require full time physician.
20 females or more require rest room.
Annual physical examinations for employees, as well as examination of new employees.

Plants are graded for safety organization activities as follows:

1. Up to 150 employees.
2. 150 to 500 employees.
3. Over 500 employees.

All plants are asked to answer questions as to their safety organization.

These questions deal with:

Supervision.
Inspection.
General committee.
Education of employees.

OCCUPATIONAL THERAPY
INDUSTRIAL SERVICE, DRS. FRENCH & EARLY, LOS ANGELES, CALIF.

PHYSIOTHERAPY AND ELECTROTHERAPY
INDUSTRIAL SERVICE, DRS. FRENCH & EARLY, LOS ANGELES, CALIF.

Industrial Medical Service Bureaus

Drs. J. R. French and C. E. Early

Los Angeles, Calif.

Drs. French and Early conduct an Industrial Medical Service Bureau, serving about three thousand employers.

They maintain one hospital (Golden State Hospital) with seven emergency branches.

First aid: Classes in first aid instruction are organized and instruction given at the base hospital. Only two representatives from one particular point can take the course at one time. Employers are advised to maintain the rule that the foremen must refer the subordinates to the first aid representative in all cases of illness or injury.

Equipment of plants: In larger establishments, a first aid room is installed, the size depending on the number of employees.

Requirements:

1. 100 employees and less—limited space in the office.

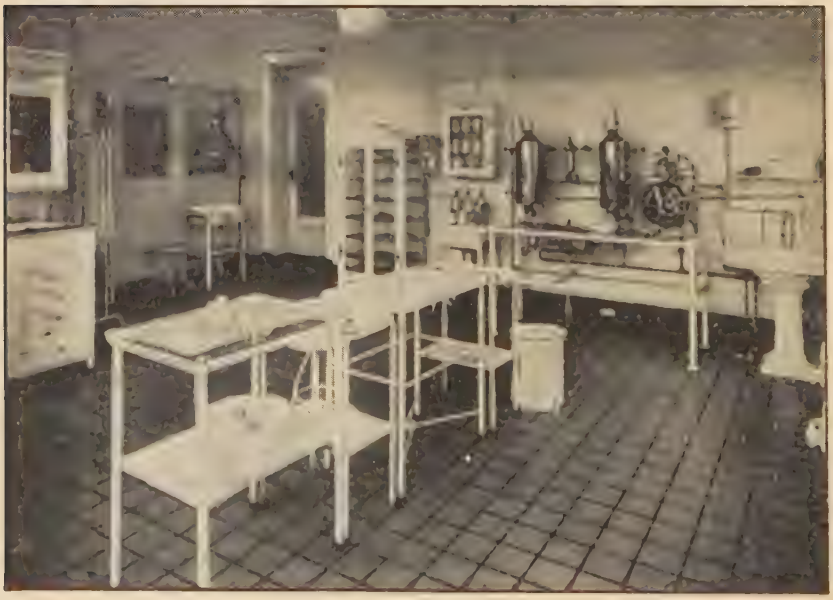
Large first aid cabinet.
Small dressing table.
Two stools.
Stretcher, and if possible, a reclining table.

2. Above 100. Additional equipment, including a stretcher. A fairly competent first aid man to be employed. No eye work carried on in the small places. An ophthalmologist is employed to treat such cases.

3. In large plants, a full or part time physician and a minor emergency hospital. The equipment usually limited to

Dressing table.
Stool.
Eye chair or lamp.
Reclining table.
Small table.
Jars for dressings.
Instruments for minor surgery.
Small hospital bed or couch.
Stretcher.
Crutches and canes.

SURGICAL OPERATING ROOM
INDUSTRIAL SERVICE, DRS. FRENCH & EARLY, LOS ANGELES, CALIF.



SECTION SURGICAL ROOM
WOLF INDUSTRIAL SERVICE, NEW YORK

Plants should be equipped for physical examinations and should afford space for a small dressing room, and include as an additional equipment, eye chart, stethoscope, etc. Where a large number of physical examinations are made, a small laboratory should be installed for urine analysis and Wassermann tests.

Wolf Industrial Service

New York, N. Y.

An organization supplying medical service to industries and insurance companies in New York and Brooklyn.

Organization:

40 Physicians.
18 Offices.
2 Hospital wards in New York and one in Brooklyn.
Branch office in Buffalo.

Methods:

If the case is only slightly injured, it is sent to the nearest bureau office. If the case is severe, it is sent to the hospital. The organization maintains its own ambulance; patients are carried to its own wards in the New York and Brooklyn hospitals. If the case is very severe, the nearest hospital is used.

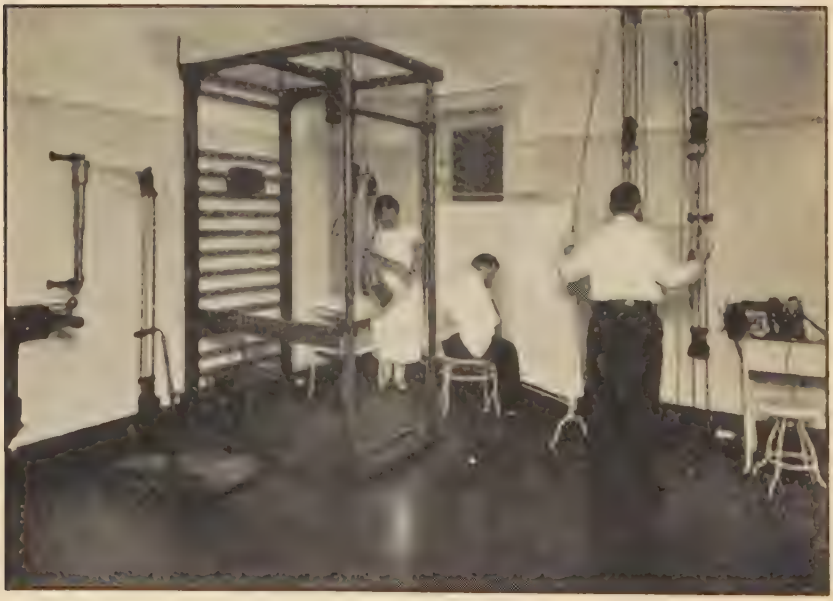
A doctor visits the plants daily, each one of which has a first aid room with a full time nurse in charge.

Detailed records are kept on all cases, with copies in the central office, branch office, insurance company and employer.

Layout and equipment of branch located at 1 East 125th Street, New York:

1. Two sitting rooms with numerous benches and chairs. The walls are covered with posters referring to first aid and safe practices.
2. Filing office.
3. Doctor's office.
4. First aid room (model).
5. Rest room.
6. Large surgical operating room.
7. Small surgical operating room.
8. X-ray department.
9. Two examining rooms.
10. Special room with Bardwell "whirl" baths.
11. Six baking stalls.

MECHANO-THERAPY ROOM WITH STATIC APPARATUS
WOLF INDUSTRIAL SERVICE, NEW YORK



MECHANO-THERAPY ROOM
WOLF INDUSTRIAL SERVICE, NEW YORK

12. Two physiotherapy rooms.
13. Two massage rooms.
14. Diathermy room.

First aid room. This room is kept as an exhibit for clients and visitors to examine and is not used. It contains the following:

1. Operating table.
2. Surgical pail.
3. Small cabinet on the wall.
4. Dressing table.
5. Steel dressing cabinet on the floor.
6. First aid kit on the wall.
7. Round basins.
8. Irrigating jars.
9. Chairs.
10. Screen.

The color scheme is white.

Recommendations by the Bureau

Physical examinations: Annual physical examinations are recommended for all. Also upon entering the employ.

Antiseptic: Mercurochrome is preferred to iodine.

Rest room: Always necessary when any number of women are employed.

Medical requirements: Depends on the hazard of the work. All places should have nurses and those where accidents are generally of the serious type should employ a physician to make daily calls and to be on call when necessary.

First aid teams: These are necessary in some places. The tendency, however, is for the first aid men to overdo things in the line of treatment. The physician should examine every case after first aid has been applied.

Allied Mutual Liability Insurance Co.

(Drs. D. L. Sohn, E. B. Armstrong)

New York

This organization maintains an industrial medical service bureau, serving a large number of clients.

Staff: 2 medical directors, 7 associate physicians, 4 nurses.

Number cases: daily, 200; new, 25.

HYDROTHERAPY ROOM
WOLF INDUSTRIAL SERVICE, NEW YORK

EMERGENCY OPERATING ROOM
EMPLOYERS EMERGENCY HOSPITAL, LOS ANGELES, CALIF.

Hospital: Ward in French Hospital, New York.
Layout: 17 rooms.

1. 2 waiting rooms.
2. Large surgical room.
3. Eye department.
4. Ear, nose and throat department.
5. X-ray department.
6. Physiotherapy department.
7. Hydrotherapy department.
8. Electrotherapy department.
9. Operating room.
10. Diathermy room, etc.

All rooms are equipped with modern apparatus. Color scheme, green.

Preferred antiseptic, mercurochrome.

Requirements for First Aid and Medical Service in Industry

THE suggestions which follow are based upon observations made during the survey outlined in this volume. They may be taken in part as the opinions of the observer, supplemented by the suggestions of industrial surgeons and workers in the medical service in the industries under review. The outline given should be taken as suggestive only.

In the main the discussion covers the service in actual use in the industries which form the subject of this survey. Added to this are suggestions looking toward an adequate medical service in industries of various sizes and types.

The discussion covers in part the subject of emergency rooms, dispensaries, hospital facilities (called the Layout) equipment, first aid and medical staff, dental and oculist service, physical examination, welfare and social service, first aid by laymen, etc.

The suggestions are intended to cover industrial plants from the smallest to the largest.

It should be borne in mind that 95% of all the factories in the United States have less than 1,000 employees, and that slightly over 60% of all workers are employed in plants of less than 500 employees.

In these recommendations, it is to be noted that all types of industry cannot be included. For example, department stores must give stress to rest rooms rather than to surgical facilities. In many industries there is little need for X-ray and physiotherapy departments or for operating rooms. In the case of railroads, where large numbers are employed, it is difficult to formulate specific suggestions. In a few instances, the railway companies and other corporations maintain their own hospitals, thus doing away with the problem of elaborate equipment. In most instances, railways maintain dispensaries at shops or terminals for emergency cases.

The hospital, dispensary or first aid room has proven to be a necessity. Their development has been due to progress and increased efficiency, coupled with a humanitarian spirit, more than the various laws that have been enacted by the states.

The success of the dispensary, hospital or first aid room depends not only on the elaborate equipment, number of rooms and large personnel, but on the relation between the employees and the dispensary attendant, whether physician, nurse or first aid worker.

The dispensary is much like the out-patient department in the hospital. From available statistics it is evident that the number of patients in the out-patient departments have been on the increase. This is not due to the fact that injuries and illness are more common, but rather that with the average individual, confidence in the hospital has increased.

It is well known that certain people are hospital "shy." Many of the slightly injured will avoid treatment at the dispensary under the pretense that the injury is too small to bother the doctor or nurse, but there is no injury so slight that complications are impossible. Many will say that they cannot bear the characteristic odor that is associated with the dispensary, while still others will avoid treatment because of their unwillingness to walk into so clean a place with smudgy clothing, and with hands and face greased and blackened. Only a few will admit that they fear the pain. Yet it is true that many a strong man has fainted at the application of a slightly irritating antiseptic or at some form of minor surgery, even where a local anaesthetic has been applied. The reason is undoubtedly psychological fear accompanied by the somewhat "foreign" atmosphere of the dispensary.

It is to be borne in mind that the injured or ill require not only treatment, but also sympathy, and that a pleasant welcome and a few kind words, will neutralize much of the fear and pain; also, the gentle touch of the attendant whether physician, nurse or first aid worker, can bear firmly at times without eliciting pain. The injured, no matter in what part of the plant he is employed, or in what capacity, is, as a rule, helpless and requires assistance. It is urged that employees be granted unlimited privileges to visit the dispensary, also, that a few minutes of rest after treatment will arouse a greater degree of gratitude from the patient than any complicated apparatus or elaborate equipment. The hospital, dispensary or first aid room should be an integral part of the plant in spirit as well as in part. A closer bond between this department and all of the employees should be encouraged, cultivated and established.

EQUIPMENT UNDER 100 EMPLOYEES

A plant employing less than 100 people can satisfy the first aid and medical needs of its employees with the use of a suitable first aid cabinet. It is advisable, however, in places employing even this number to set aside a suitable room for the purpose. If an allotment of such space is impossible, then the office of the plant may be used. It is inadvisable to treat injuries in the work rooms of the factory.

As aforementioned, a suitable first aid cabinet will suffice in most cases. The contents of such a cabinet should include:

One First Aid for Wounds Packet
One ounce Absorbent Lint
Four packages Absorbent Gauze, 1 yard x 36 inches
One package Absorbent Cotton, ¼ pound
One spool Adhesive Plaster, 1 inch x 10 yards
Six Cotton Roller Bandages, 2 inches x 5 yards
Four Cotton Roller Bandages, 3 inches x 5 yards
Four Gauze Bandages, 1 inch x 10 yards
Eight Gauze Bandages, 2 inches x 10 yards
Four Gauze Bandages, 2½ inches x 10 yards
Four Picric Acid Gauze Pads
Six Finger Cots
One Triangular Bandage
One 2-ounce bottle Aromatic Spirits of Ammonia
One 2-ounce bottle general antiseptic and disinfectant solution
One empty 8-ounce bottle for this Solution
Two 3-ounce tubes Bicarbonate of Soda and Petrolatum 3%
One 3-ounce bottle Boric Acid Solution 4%
One 2-ounce bottle Alcoholic Solution of Iodine
One 2-ounce bottle Castor Oil
One box of combined compress-adhesive tape dressings
One dozen Wooden Applicators wound with cotton
One dozen Wooden Tongue Depressors
Four Wooden Splints, 15¾ inches x 3¼ inches
One Tourniquet
One pair Scissors. One pair Tweezers
Two packages Safety Pins (12 small, 6 large)
One graduated Medicine glass
Six paper cups
One First Aid Manual
Blanks for reporting accidents
Blanks for inventory and ordering refill supplies

In certain types of industry an excess of splints, bandages, etc., will be found advantageous. Where women employees predomi-

nate, suitable medicines may be needed. Very little equipment outside of the necessary articles need be kept—a table, two chairs, a cot, glazed sink, supply of towels and soap, and a blanket or two will usually suffice. A stretcher should be available and close at hand.

100 TO 300 EMPLOYEES

This number would require a moderate sized room with a floor space of approximately 200 square feet, divided by a partition. This room should be centrally located, and afford the patients privacy and comfort. It should be well supplied with light, heat, and good ventilation. It is recommended that the floor be of impervious material such as linoleum, tile, magnesite, etc., and that the walls be painted, preferably a shade of green, otherwise white or light tan.

The equipment should include the following: glazed sink with hot and cold running water; sterilizer; table with smooth top; two or more chairs; a couch or a bed with two pillows; two woolen blankets; heavy rubber sheet; waste receptacle; stretcher; enameled wash basins; hot water bottle; individual drinking cups; desks for doctor and nurse. A first aid cabinet should be maintained with such additional supplies as may be found necessary, such as teaspoon, eye-dropper, etc. Simple medicines for common ailments, colds, etc., may be kept at hand. If the department is active, similar equipment may be duplicated through the plant.

300 TO 500 EMPLOYEES

Two rooms should be available. These are to be kept clean, light and airy. One room, small in size, is to be used as a waiting room. The second or larger may be divided into two parts—the smaller part to be used for physical examinations, and the second part for treatments and dressings. If there is a fair percentage of female employees, parts of the second section can be devoted to male and female patients, respectively. The type of floor and color scheme are identical with the foregoing.

A waiting room containing chairs or benches is a necessity. If a part of the dispensary is devoted to physical examinations, it should also contain a doctor's desk, eye chart, chairs, scales, flat-top table and screen. The dispensary proper should contain a nurse's desk; table for dressings; a chair with a head-rest for eye work; an adjustable light; magnifying glass; and other neces-

sary instruments for eye, ear, nose and throat work; sterilizer; glazed sink; chairs with arm-rests; foot-rests; arm and foot basins; waste pail; stool; a cot; a closet for medicinal and surgical supplies, including besides dressings, medicines and simple drugs; a cabinet for surgical instruments (scalpel, razor, several forceps, hemostat, etc.). Blankets, pillows, splints, etc., may be kept in the supply closet—a stretcher is to be placed at the door. Physical examinations can be carried on in a corner of such a room when separated by a screen.

DRUGS AND MEDICINES

The following list represents the selection of medicines noted during this survey:

Internal

Aspirin
Aromatic Spirits of Ammonia
Bismuth Subnitrate
Potassium Iodide
Brown Mixture
Castor Oil
Compound Cathartic Pills
Magnesium Sulphate
Rhinitis Tablets
Rhubarb and Soda Mixture
Soda Bicarbonate Powder
Sodium Salicylate
Blaud's Pills
Amyl Nitrite "Pearls"
Wine vinegar

External

Carrél Dakin Solution
Collodion
Lead Acetate and Alum
Tincture of Iodine, 3½%
Alcohol
Mercurochrome, 1 and 2%
Ammoniated Mercury Ointment
Bichloride of Mercury
Boric Acid Powder
Boric Acid Ointment
Tannic Acid and Glycerine Lotion
Alkaline Antiseptic Solution (Throat Gargle)
Silvol (Capsules)
Chloroform
Ether
Ethyl Chloride
Novocaine, 2%
Burn Ointment
Glycerine
Liquid Soap—Antiseptic
Analgesic Ointment
Yellow Oxide of Mercury Ointment
Zinc Oxide Ointment
Dusting Powder—Thymol Iodide
Benzene
Mustard Powder

500 TO 1,000 EMPLOYEES

Three rooms are usually required—the first a small waiting room, the second room for physical examinations, and the third for treatment and dressings. If, however, the number of female employees is large, then a room should be devoted to each sex. Examining booths may be installed for the purpose of physical examinations. Instead of booths, a corner of the room can be

divided by a suspended curtain. If the number of employees reaches toward 1,000, and the service is active, it will be advisable to supply an additional room which, when required, may be used as a hospital rest room for severe cases. Such an additional room may serve as a supply room. Suitable lavatory facilities should be provided for each sex. If the service is not active, the rest room for women is preferred to the physical examination room.

The equipment needed is of necessity more elaborate than that noted in the foregoing section. The waiting room should provide ample seating capacity, as well as the nurse's desk. The physical examination room may be small, but should provide the necessary equipment, including doctor's desk, eye chart, flat-top table, scales, chairs, closet for hanging clothes, etc. The surgical room should be large and should carry equipment similar to those industries employing 300 to 500, but in greater amounts. In addition, it should carry such additional instruments as may be found necessary through the number of patients or the nature of the industry. Extra chairs, increased number of dressings, and other surgical supplies will complete the equipment in such a room. Physical examination booths should contain chairs and hooks on which the patients may hang clothes. The surgical room for either sex should contain a screen useful in cases where it is desirable to examine the patient in detail.

The following is a list of surgical instruments, as noted in the survey:

One bandage scissors
One sharp-pointed dressing scissors
One blunt-pointed dressing scissors
Two medium sized thumb forceps
One splinter forceps
One silver probe
One groove director
Six small artery clamps
One hypodermic syringe and needles
One razor
Two scalpels
One dozen suturing needles
One needle holder
One tourniquet
Six tubes No. 1 and No. 2 plain catgut
Six tubes No. 1 and No. 2 chromic catgut
One hank silkworm gut
One card suturing silk

Two pus basins
Four basins for arm and foot—four ordinary basins
One bed pan
One head mirror
One tongue depressor (metal)
Three pairs rubber gloves
Clinical thermometer
One large dressing forceps
One irrigation jar and tube
Several jars for various solutions on metal stand
One nasal speculum
Ear specula
One adjustable stand light
One screen
One desk clock
Several scrubbing brushes
Several bottle racks
Two eye cups
Two dozen tongue depressors (wooden)
Stethoscope
Sphygmomanometer

1,000 TO 2,000 EMPLOYEES

The layout here depends chiefly on three factors—first, the nature of the industry, second, the location of the plant, and third, the type of service which it is to maintain. Where possible, it is advisable to maintain a dispensary in a separate building, especially so in the case of hazardous or "smudgy" industries. If a separate building is not available, then a corner in the office building may be utilized as a dispensary. The minimum number of rooms should be four (exclusive of the offices). It is advisable to include (1) a waiting room; (2) physician's office; (3) nurse's office, which can also be used for the keeping of records; (4) a main surgical room; (5) physical examination room; (6) small laboratory; (7) dental department. If the medical service is extended, an X-ray room, a physiotherapy room and a hospital rest room may also be maintained. A small surgical room may be added for infected cases and a larger one for clean cases and initial dressings. If the number of female employees is over 35%, the surgical rooms may be devoted to male and female cases, respectively. The type of floor, color scheme, etc., are discussed above.

The doctor's office may be combined with the physical examination room, and in this case should contain desk, scales, eye chart, etc. A flat-top table may be used for the examination of patients in a reclining position. The nurse's desk should be

placed in a room containing filing cabinets. The main surgical room should be equipped as outlined in previous sections, with the addition of an adjustable operating table. An instrument case should also be provided. A corner of the room may be devoted to eye, ear, nose and throat work, outfitted with the necessary lights, instruments, chair with head-rest, adjustable light, nose and throat sprayers, eye solutions, head mirror, specula, ear forceps, applicators, table, etc.

Surgical and medical supplies are to be provided in sufficient quantity to supply the increased number of cases. A sterilizer, ventilator, irrigation outfits with basins, foot-rests, etc., are also advisable, as well as a medicine cabinet supplied with remedies, for the more common ailments.

A small laboratory may be equipped for urine analysis. This room may also carry a supply closet. This laboratory or supply room may be combined with the physical examination room or with the doctor's office. In either of the two instances, a corner of the room may be used for caring for the very simple apparatus.

An X-ray room, if deemed necessary, can be equipped with a modern apparatus of the simpler type. In an industry where only a limited number of X-ray cases are met with, a portable type apparatus can be used. A dark room for developing X-ray films is necessary. Such a small room can be partitioned off from the X-ray or examining office. It is recommended in instances where the medical service is extensive or where injuries are frequent and severe, that a physiotherapy department be established. The room should contain preferably two or more cots, each in a separate compartment or cubicle, or they may be placed in a row, separated by curtains. The apparatus may well include a diathermy machine, ultra-violet and sun-ray lamps. A dentist's office will be found necessary. Rooms for dental service should contain a dental chair, dental drill, water flush basin, waste pail, sink and an instrument cabinet, with the necessary outfits. Where women are employed in large numbers, it may be found advisable to equip a small rest room solely for female cases. This may be combined with the small surgical room mentioned above. The rest room should contain a bed, screen, cot and chair.

2,000 TO 5,000 EMPLOYEES

The layout here is similar to the one for 1,000 to 2,000 employees, except for increased space. Based upon observations

made during the survey, the arrangement should be somewhat as follows: (1) waiting room; (2) doctor's office; (3) nurse's office; (4) room devoted to physical examinations; (5) two surgical rooms, one for clean and one for infected cases, or one for male and one for female patients; (6) X-ray and dark rooms; (7) physiotherapy room (two rooms where women are employed in large numbers); (8) laboratory; (9) hospital room for severely injured cases; (10) dental office situated near the waiting room. All minor surgery should be carried on here, even if hospital facilities are at some short distance. When the plant buildings are scattered, it is at times necessary to have a dispensary in one of the outside buildings. The color schemes, types of floor and the necessary facilities for light, heat and ventilation are the same as heretofore noted.

Proper equipment is necessary for the waiting room. The doctor's office may be divided where more than one physician is in attendance. Where the doctors' offices are separated, they may be outfitted so as to enable each physician to carry on physical examinations. Such equipment would consist of desks, scales, eye charts, etc. The nurse's office should be near the waiting room, with the record files near at hand. The equipment of the physical examination room depends on the nature of the industry and the labor "turn-over." It may be fitted out independently or combined with the doctor's offices. The surgical room equipment will depend upon the nature of the industry. If few women are employed and separate rooms are provided for clean and infected cases, respectively, the first room should contain chairs, operating table, overhead electrical fixtures, instrument cabinet, dressing table with medical and surgical supplies, foot-rests, sterilizer, etc.

The second room for infected cases should be equipped similarly. The instrument cabinet in the room for infected cases will need to contain more surgical instruments than the previous one. Part of the first room may be given over to eye, ear, nose and throat work, and have the necessary equipment therein, including adjustable light, chair with head-rest, etc. It is often advisable, however, to erect a booth or room (5 x 5) for this purpose, the inside of such room or booth to be painted black to facilitate examinations.

Equipment for this work should include:

One table, metal (glass top)
Chair with neck rest

Focusing light on bracket
Head mirror
Nasal and throat sprays in rack with solutions
Pus basin
Metal irrigating can
Nasal speculum
Ear specula
Ear curette
Ear or nasal forceps
Wooden applicators wound with cotton
Eye solutions in dropper bottles
Cataract knives, eye spuds, etc.
Magnifying glass
Waste bucket
Ear syringe
Petrolated gauze packing strips
Sterile gauze, cotton, etc.

The X-ray room and dark room should be equipped with suitable apparatus (table, machine, luminator, solutions, etc.). The physiotherapy room should include the necessary apparatus with additional cots or beds. If women employees are numerous, two rooms may be found necessary. In all cases it is advisable to subdivide the room into cubicles or stalls by a partition or curtain to insure privacy. It is found that where two rooms are maintained that one set of apparatus will meet the needs.

The laboratory should be equipped to do ordinary urine analysis and blood counts. Laboratory work can be extended to include the Wassermann test and sputum examinations. It should contain a microscope, one or more sinks, incubator, glass ware, reagents, etc.

A hospital rest room is necessary in large and in hazardous industries. The room should be dark, well heated and the beds preferably of the ordinary type, instead of the "stiff-spring" hospital type. Where both sexes are employed, two rooms will be necessary. A screen, chairs, electric fan, etc., are a necessary part of such a room.

The dental office, if provided, may be equipped as noted heretofore. It is advisable to place the dental office near the waiting room, so that the dental patients may come and go without disturbing the other patients.

Where a branch dispensary is maintained, this room should have simple equipment with supplies of small dressings to meet the needs. Important cases should always be treated at the

main dispensary. Lavatory facilities for each sex must be supplied.

5,000 TO 10,000 EMPLOYEES

The layout here is the same as in the foregoing, except that additional rooms are necessary where the number of cases treated is large. Where the nature of the work is hazardous and the plant is not located near a hospital, the company may maintain its own hospital. It is to be recommended in such a case that an entire building be devoted to the medical department, preferably located in the grounds. Where the company maintains its own hospital, two operating rooms will be found necessary, one for minor and one for major surgery. At least two hospital wards also should be maintained, one for either sex. Rooms for dental work and for eye and ear work are also necessary. The type of floor and color scheme are the same as heretofore noted. Where major surgery is not done, the operating rooms may be used for clean and infected cases, respectively. The remaining rooms are as mentioned above—physiotherapy, waiting room, laboratory, offices, X-ray, rest room, etc.

The equipment in a large industry such as this must be extensive, especially if the number of cases treated per day runs high. Where possible, it is advisable to have an entire building devoted to the medical department. A large waiting room should be placed near the door and should have a seating capacity reaching from 75 to 100. If a large proportion of women are employed, it would be well to have a separate waiting room. Easy access should be provided from the waiting room to the physical examination room, to the surgical room and to the hospital room. The doors leading to the hospital rest room should be wide enough to permit the carrying of a patient on a stretcher.

The waiting room should contain a clerk's desk and the necessary personnel to provide for accurate registration of information in respect to the injured. A rolling stretcher should be provided, and placed near the entrance. As to physical examination rooms, one large room or several smaller rooms may be provided. If several physicians are engaged in the examination work, it is advisable to provide a room for each physician; these will serve as both examining rooms and offices.

A large room should be equipped as a surgical operating room, and should contain an operating table, an instrument cabinet

with proper instruments, small tables for dressings and antiseptics, a sterilizer, glazed sinks, ventilator, etc. If the service is large, an additional operating room may be found necessary. In case two rooms are provided, one room can be devoted to clean cases and the second to infected cases.

If the plant is situated at a distance from hospital service, it may be advisable to be equipped to perform operations reaching to major surgery. In such case, an operating room adequately equipped will need to be maintained. This room should in all respects be equal to the operating room in a regular hospital. The equipment should include an operating table, an instrument cabinet, glazed sinks, scrubbing brushes, mirror, stools, basins, instrument table, aspirator, etc., and likewise electric fixtures of the type used in a hospital. A sterilizer as well as supplies for operations should be placed in a small room adjoining the operating room and separated by swinging doors.

The X-ray department should be equipped with suitable apparatus and should include a stereoscope, fluoroscope, luminator, table, and machine. The dark room may be small. If the number of X-ray cases is large, a small room may be devoted to the keeping of records and films.

The physiotherapy room should be adequately equipped, and if the number of women employed is large, two rooms should be provided, one for either sex. The room should be divided into cubicles by partitions, each cubicle containing a flat-top table, well padded. The apparatus for this department is a matter for the staff to decide. It would seem to the observer, however, that the necessary machines should include the diathermy, the ultraviolet lamp, electric bakers, Krommeier lamp, a large sun-ray lamp, and a thermolite apparatus. It may be advisable to have a room which would contain additional apparatus such as the various devices used for muscle training. Two hospital rest rooms should be maintained, one for each sex. Each room should contain at least two beds of the ordinary type, a screen, sink, closet and several chairs. A room is to be devoted entirely to eye, ear, nose and throat work, and should be painted black and equipped with the necessary apparatus. The dental office must be equipped with modern dental apparatus such as described heretofore, and should also be provided with a small waiting room. A small laboratory should be maintained, equipped for routine urine analysis and blood work. If desired, the apparatus

can be provided to include sputum examinations and Wassermann tests.

A room may be devoted to the keeping of records and should contain cabinets, desk, typewriter, etc.

OVER 10,000 EMPLOYEES

Specific details as to layout in such an industry will vary with the nature of the industry, severity and frequency of accidents, location of plant, etc. We will, therefore, discuss only a plant which employs over 10,000 in one locality. It is advisable that an entire building be devoted to the medical department, especially where the industry is of the hazardous or "heavy" type. It should contain (1) waiting room; (2) large surgical dressing room; (3) room for eye, ear, nose and throat service; (4) dental room; (5) operating room for major cases; (6) operating room for minor cases; (7) hospital ward for women; (8) hospital ward for men; (9) X-ray department; (10) examination booths or rooms; (11) physiotherapy department; (12) laboratory; (13) dietitian's office. The question as to major surgery is at the discretion of the owner and the chief surgeon. If, as is often the case, it is preferred to send such cases to a hospital, it will prove satisfactory. If major surgery is carried on, an additional operating room may be maintained for infected cases. If one wishes to elaborate, a small surgical room for females may also be equipped. Two rest rooms should be maintained, one for men and one for women.

Increase in the number of employees does not materially change the principle governing the equipment of the medical service in industries. The larger the number of employees to be cared for, together with the nature of the work, will govern the equipment. The equipment noted in the preceding section will apply to many industries employing over 10,000 except that, as the number rises, greater capacity and more apparatus are needed. The suggestions noted below follow that installed in one of the plants visited, and was of sufficient capacity to care for nearly 20,000 employees.

The waiting room should have sufficient capacity to seat 100. This room may be divided into sections for males and females. An information desk should be maintained in this room. The surgical dressing room or rooms should be equipped similarly to the equipment described in the preceding section. They should contain dressing tables, sinks, sterilizers, chairs, foot-rests, dress-

ings, waste pails, solution jars, instrument cabinet, etc. A separate room should be maintained for eye and ear, nose and throat work, with the necessary apparatus.

The dental room equipment should include electric drill, cabinet with instruments, dental chair, flush drains, water pail, etc. If the dental service is large a dental X-ray apparatus may be installed. A small waiting room should be maintained in this department to meet the requirements.

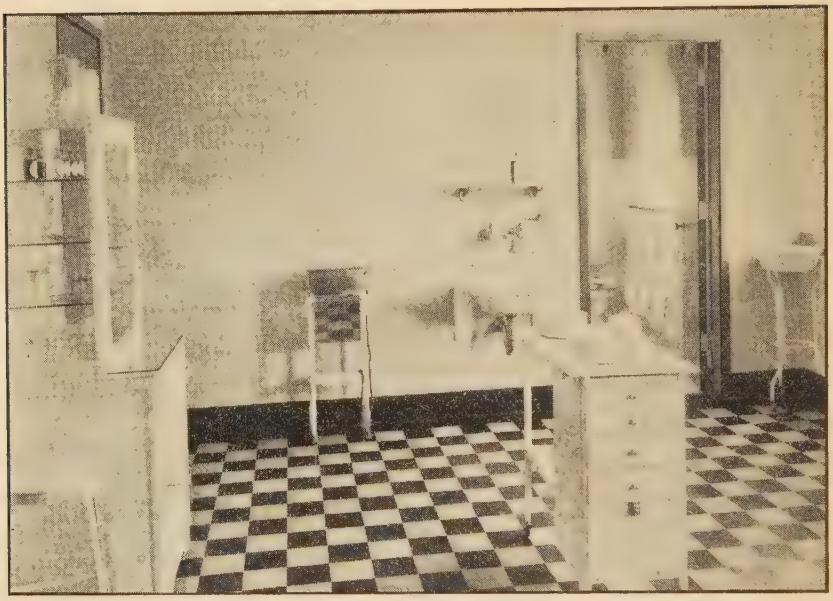
In the X-ray department, the equipment should include, aside from the straight and Bucky tables, a fluoroscope, stereoscope, a luminator, a small dark room, and a space for storing records. One or more rooms may be used for a physiotherapy department. A room partitioned off into cubicles has been found to be well suited to the purpose. A second room should be equipped for muscle training cases, etc. The apparatus is the same as described in the preceding sections. Three most important adjuncts are the diathermy, the ultra-violet lamp and the muscle training apparatus.

With a large sized medical staff it is advisable to carry on physical examinations in the offices allotted to the physicians. From four to six might be utilized, each equipped with desk, chairs, eye chart and other necessary appliances. If women employees predominate, special rooms for their accommodation will be required, including the physiotherapy and hospital ward.

The laboratory should be equipped with apparatus for urine analysis, blood work, sputum examinations and Wassermann tests.

A dietitian's office may be installed, equipped with a desk, and cabinets for records. Usually the kitchen and other working parts of this department are placed elsewhere.

If major surgery is not carried on, two rooms should be equipped for minor surgery, one for men and one for women. Each should contain operating table, instrument cabinet, etc. Sterilizing apparatus can be placed in a room between the two operating rooms. If major surgery is done, then an operating room for major cases will be required, equipped along the lines of operating rooms in hospitals. Two wards should be equipped, one for either sex. Each should contain beds of the hospital type, screens, roller chairs, inverted ceiling lamps, etc. Whether major surgery is, or is not done, a hospital rest room for men and another for women should be maintained, each to contain about



SMALL EMERGENCY ROOM FOR INDUSTRIAL ESTABLISHMENT

four beds, together with such articles of furniture as may be necessary. A special rest room may be maintained for women who are not sufficiently ill to be placed in the hospital rest room. This room should be kept dark and contain several beds or cots, and in an adjacent room simple remedies may be kept.

One of the industries visited seemed to have installed an ideal arrangement for the examining and treatment of employees. The work carried on is not hazardous, and the female employees predominate. Each examining room is partitioned off into three. In the first compartment the patient removes clothing, in the second compartment all specimens for laboratory work are taken, in the third compartment the patient is examined and treatment for wounds or injuries given.

Important adjuncts to any hospital department of a fair-sized plant are apparatus that have proven useful in resuscitation. Among these may be included the oxygen tank and the new type of inhalator (oxygen and carbon dioxide).

Other important articles of equipment are the apparatus necessary for blood transfusion, and for forcing fluids into the body (hypodermoclysis).

Medical Staff and Service

OPINIONS as to proper medical personnel in industries are not in accord. Usually there are three different individuals who attend to injuries, viz: the physician, the nurse, and the first aid worker. The status of the first aid man is not clearly defined. There are instances where such a person is useful, and in many instances absolutely necessary. In a plant that is centralized and carries a suitable medical staff, the duties of the first aid man are of a minor character. The functions and duties of a first aid man as related to the treatment of injuries are: that he shall have had some training, that he acts under the supervision of the attending physician, and that he should confine his activities towards making the patient comfortable until medical aid is available.

In small establishments where a physician calls only when needed, and where the work is too small to employ a nurse, the first aid man will, of necessity, be called upon to render aid to the injured while waiting for medical aid. The training of the first aid workers is discussed elsewhere.

PHYSICIANS

Regardless of the number of employees, no industry can dispense with the services of a physician.

Equitable arrangements for plants employing 300 or less are (1) The Industrial Medical Service Bureaus, (2) "Pro Rata" Dispensaries, (3) The "Single Fee Basis," and (4) Physicians "On call" only.

Industrial Medical Service Bureaus have been established in many of the larger cities. They maintain a medical and surgical service, supervise the first aid activities and advise as to the equipment, etc. All injuries are sent to a dispensary maintained by the service bureau. For cases of severe injuries, the bureaus maintain their own ambulances, the patients being cared for in a hospital, where the bureau maintains one or more wards. In one instance the bureau maintains its own hospital. The bureau assigns physicians who make periodical calls to the industries under their charge. Nurses receive instructions from the physicians of the bureau.

The "Pro Rata" Dispensary is an arrangement whereby sev-

eral establishments within the same building, or plants closely related, establish a dispensary and employ physicians who will supply medical service on a "pro rata" basis.

A third method of medical service applicable to small plants is an arrangement carried out on a fee basis; under this plan a physician receives a fee from the employer for visiting the plant daily. He receives this fee irrespective of the number of cases to be treated. The physician is obligated to make a call daily and to be on call when needed.

The fourth method is the plan by which a designated physician attends only when summoned.

In the large plants or in industries where the work is hazardous, the decision as to medical attention lies in the comparative values of the full time and the part time physician. The consensus of opinion seems to be that full time physicians are indicated only in a few instances, chiefly in the administration service, in railways, in plants remote from hospital service, etc.

The part time physician is undoubtedly gaining in popularity. Plants which formerly employed one full time physician now find it economical to employ two part time physicians and thereby obtain better medical service. The benefits derived from the full time physician are stated to be (1) that he is always on the grounds; (2) that he devotes his entire time to the company; (3) that he is thus able to have a better knowledge of the patients and will become more thorough in such branches of medical service as physical examinations, personnel work, etc. Those advocating the part time physician maintain, however, that many full time physicians after years of service, become narrowed in knowledge and technic, and are far behind other practitioners. They maintain that a part time physician who is permitted to engage in private practice will follow more closely the progress made in medicine and surgery. This arrangement, it is believed, will benefit all three—the physician from a monetary point of view, as well as that of acquired knowledge. The employer and employee will be benefitted by having a more capable attendant to care for their needs. Where a number of part time physicians are employed, the rotation system can be established through which there will be a physician at all times on the grounds.

To summarize the requirements of industries as to medical service, it may be stated that (1) all plants should have medical

service; (2) that the smaller plants may have the services of a part time physician, whether it be through the Industrial Medical Service Bureau, through a pro rata arrangement, or whether they engage a physician to make stated calls; (3) that a plant employing 1,000 or more will probably have work in its dispensary to require a full time physician (or two part time physicians); (4) that where the work is hazardous even 500 employees may require the services of one full time or two part time physicians, and lastly, that in general the part time physician arrangement has been more satisfactory than the full time, except in the instances enumerated, i. e., chief surgeons of railroads and large industries, chief surgeons of large plants in which administrative work is needed, and in plants remote from hospital facilities.

NURSE

It is difficult to name the minimum number of employees that may require a nurse. This depends upon the type of the industry and the frequency of the accidents. Observers have stated that all places employing over 150 should employ a full time nurse. Places employing as few as 100 might afford the services of a nurse, if the number of injuries is large. The necessity of employing a full time nurse may be governed by the number of cases of injury at a given plant.

DENTAL SERVICE—OCULIST SERVICE

Within the last few years, the importance of the employment of a dentist and of an oculist has been stressed. Both of these have been found to be important adjuncts. In the opinion of observers, industries employing 1,500 or more may well secure the services of a dentist. Smaller organizations may secure the services of a dentist who will call at intervals. Where physical examinations are in vogue, the services of a dentist are important and his work may be extended to prophylaxis and treatment.

The employment of an oculist is important, especially so where eye hazards are present, as in steel mills and foundries, in the manufacture of glass instruments, etc. Interference by a person not versed with the anatomy of the eye has led to irreparable injury, and the value of the eye is sufficiently high to place this service in the hands of an ophthalmologist who visits the plant daily, or is summoned when necessary.

PHYSICAL EXAMINATION

The question of physical examination has become prominent within the last few years. The examination of new employees is quite commonly in vogue. Periodic examination remains on debatable ground, many employers believe that periodic examinations are unnecessary. On the other hand, it has been found that more money was paid to the employee by reason of illness or death than the cost of maintaining periodic examinations for all employees. It is urged that the benefits derived from periodic examination favor the employer and the employee alike.

For the Employer: A physically and mentally normal working force will provide for greater efficiency in the plant. Good business policy coupled with a humanitarian spirit demands the conservation of the life and health of employees. A worker kept in good health will save the employer a good deal, in time lost, in money lost and crippled efficiency.

For the Employee: A physical examination is invaluable in forestalling an invading malady. It tends to bring to light any signs of incipient occupational disease. By discovering the defect through examination, steps to correct any defect can be taken and the body kept in normal health. The employee must likewise bear in mind that the guarding of his health will insure a continued means of support for his family.

It is believed that in time many States will pass laws requiring periodical examination of employees.

In recent years the general health of the working class has improved materially. This is in part due to the importance of physical examination. No doubt in many cases, the examination given at the plant is the first the employee has undergone in a long time. Hundreds of people are unaware of severe lesions that they have been harboring for perhaps years, until these are brought to light by the physician when the men have applied for work. Not only is the examination extremely beneficial in a case where the lesion is of the corrective type, but also where the ailment is more serious, it is to the advantage of the applicant to have the defect pointed out, even if employment has been denied him.

The intervals at which the periodic examinations should be carried on are determined by the nature of the industry and by the specific work of the employee. For example, all industrial

organizations should examine all new employees, and should examine all employees annually. Employees handling food should be examined at frequent intervals, with special attention directed to venereal diseases. Men whose work depends upon their vision should have their eyes tested frequently. This group will include engineers, motormen, signalmen, etc. Men who are employed in extremely hazardous industries, such as dusty trades, quarries, etc., should be given inspections frequently to forestall any onset of occupational disease. The same is true in the case of lead and zinc workers, and others.

Aside from the entrance examination and the periodic examination for special workers, we find that physical examinations have been found necessary in certain other instances: According to Dr. H. E. Mock: (1) those found at the first examination to be below standard; (2) those becoming ill while at work; (3) those returning to work after an illness; (4) repeated examinations to guard against a recurrence of illness; (5) those recommended for examination by a physician, nurse, manager, friends, fellow employees and benefit associations.

Physical examinations should be a thorough head-to-foot examination, including the eyes, ears, nose and throat, lungs, heart, abdomen, etc. A urine analysis should be made and where necessary blood and sputum examinations.

It is also recommended by authorities that a brief psychological or a mental test be given to the employee, to determine his fitness for hazardous or skilful work.

FIRST AID BY THE LAYMAN

It is true that both physicians and laymen have protested against first aid work by the laymen. A survey of various industries such as here recorded is witness of the value of lay first aid. The thousands of employees of telephone and telegraph companies and like industries, who work far away from any medical attention, cannot be accompanied by a physician who would care for their injuries. The same is true in the mining industry. No miner can be accompanied by a physician when he descends into the colliery.

At the National Safety Council Congress in Detroit, 1926, one speaker, a physician, remarked that it would be of value to have all households, all vehicles and automobiles supplied with first

aid outfits; that the hazards on the highways, homes, etc., are so great that pedestrians should carry pocket kits.

It is important that the layman be in some measure qualified to attend to injuries and that he has received at least an elementary instruction in first aid. In most of the industries, courses in first aid are given to the employees. Many railroads have given courses to nearly all of their employees. The telephone and telegraph companies have given instruction to a large percentage of employees. In other lines of industry, the percentage of first aid training is increasing. It is true, however, that in certain industries, well equipped with a medical staff, first aid training of the layman has been abandoned. The fact that the employee is trained in first aid does not require him to attend to the injuries in a place where medical service is at hand. Knowledge of first aid measures will increase the educational qualifications of the layman and will make him useful whether at home or elsewhere, in case of accident.

First aid training of the layman is generally carried out in two ways. In some industries, employees are taken in groups, organized into teams, and trained. First aid contests are held, and the respective teams remain as units. Fifteen lectures are usually given as a course, each lecture lasting for one hour. The lectures are given by the plant physician, by the American Red Cross representatives, or by representatives of the U. S. Bureau of Mines. In some cases members of the Safety Council carry on the instruction. The course usually covers the treatment for the most common injuries and can be summarized as follows: (1) how to treat hemorrhage; (2) how to treat asphyxia from gas, electricity, drowning, etc., (3) the commonest forms of splinting; (4) what not to do. The men are warned against giving anything by mouth. They are drilled in the prone pressure method of resuscitation (Schaeffer Method) and it is of common report that these men are more skillful in this work (resuscitation) than many physicians.

In some industries, the layman is not permitted to treat wounds, and his activities are confined to resuscitation alone.

The second method of first aid training may be termed the individual method. Here there are no organized teams, but men are chosen because of their educational or other qualifications, and are trained similarly to the course just outlined. This form of training is usually encountered in industries where the medical

department is centralized and it is only for the common knowledge and educational opportunities that instruction is given. In many instances, the men are not selected but are invited to these lectures, and many come voluntarily. Safety supervisors have stated that these lectures are well attended and are of great benefit.

REST ROOMS

The rest room, in the opinion of many, is as important as the surgical dressing room. In plants that employ a large percentage of women, it is found that many ailments are relieved by an hour's stay in the quiet and comfort of the rest room. Many States have enacted laws requiring the maintenance of rest rooms. The State of Pennsylvania, for example, requires a rest room in industries where only five women are employed.

Ordinarily, a rest room is associated with female employees, yet, there is reason to believe that rest rooms for men are an important adjunct. In every industry, there are found men who are not in the best physical condition, or who have just returned to work after illness. It is also a fact that men, regardless of their strength and vitality, have been known to collapse during the treatment in the dispensary, in part because of their unfamiliarity with pain, or the psychological fear. For such cases, a few minutes rest on a cot will prove very beneficial. Some industries have established rest rooms for men, and there is no reason why others should not follow this example.

There is another type of rest room, which might be termed a "club room" such as are to be found in many of the industries. This type of room may be used for rest room, club room, social room, and various types of recreations may be held there. Employees appreciate such an arrangement.

Welfare

The importance of a welfare program is evident, especially in plants employing large numbers. To the average worker nothing is looked upon with greater favor than things done by the employer looking towards his welfare. This is especially true in small towns where most of the inhabitants are employed by one industrial organization. Any kind of a welfare program is bound

to arouse a better spirit in the employees, resulting in happier and more efficient workers.

A welfare program is unlimited, and depends upon the co-operation of employer and employee. The smaller the town the larger the program may be. Likewise, the larger the industry, and the more well known it is to the outside world, the greater the welfare program may be.

Visiting Nurse: An important part of welfare and medical work is the visiting nurse. All large industries, as well as industries where hazards are frequent and the number of injuries large, should employ at least one visiting nurse. The duty of this nurse is to visit the home, to see the injured who is convalescing, to view conditions at the home, and to report any needs of the family of the injured employee.

Upon the return of the injured employee it is the duty of the visiting nurse to see that he is subjected to re-examination and to guard against a recurrence of symptoms.

Social Service: The social service worker is usually a visiting nurse, but in a large industry may be an independent individual. The duties are similar to those of the visiting nurse, namely, investigations at home with a view of ascertaining any needs, medical, legal or other, and to devise ways of helping the employee and his family.

Publications: Many industries depend merely on the posters scattered about the plant, warning the employees against carelessness or neglect. As a part of the welfare program, a publication, weekly, monthly or otherwise, will tend to arouse a community spirit among employees. It is important that the employees have a part in the publication, and in some cases the publications are left entirely to the employees—a step worth while considering, and one which is bound to reward the employer with a happier and more contented group of workmen.

Educational: Another feature of the welfare program that some industries maintain is that of educational facilities. The employee is permitted to study in his spare time at a small cost, or at the expense of the employer, and to equip himself with sufficient knowledge to be in line for advancement.

Monetary or Emolumental: There are various other forms of welfare work carried on by employers. Some of these pay bonuses, give prizes; some pay to all employees the same dividends that they pay to stockholders; some issue or give stock to their

men. There are maintained self insurance associations, sick benefits, pensions, etc.

Recreational: Athletic competition, outings, and recreational activities of all types are important. Music bands, baseball, basketball and track teams are organized in many industries. The spirit displayed in the athletic contests, both by the spectators and players, may rival that of the collegiate or professionally organized sports.

An important step in promoting the welfare of the worker lies in the workmen's compensation laws established in various states. These laws have lifted the worker to a higher place in the community, and have made him a better citizen.

Industrial Safety Organization

(*Extracted from Bulletins*)

Less than 150 employees: May need only one Safety Committee. This should include a manager, superintendent, plant engineer, master mechanic, one or more foremen, one or more workmen, safety engineer, purchasing agent, employment manager, and a physician. This committee should meet at least once a month, and the safety engineer, who should serve as secretary, should submit reports. Recommendations and discussions relative to accident prevention should here be made.

150 to 500 employees: Should have two safety committees
1. The plant safety committee (described above).
2. Workmen's safety committee

The latter committee consists of three or more men supervised by the foreman. The duties of such a committee is to make monthly inspections of conditions and practices and to warn the fellow workmen of dangerous practices. They are also to interpret safety rules and to improve the cooperative spirit between the management and employees.

500 or more employees: The committees are the same as for the medium sized plant, except that a Workmen's Safety Committee can be placed in each department.

Companies operating two or more plants should have the same as the large plant, and also an Inter-plant or Central Safety Committee. This committee should consist of operating executives, managers of individual plants, etc., the chief engineer, head of

employment department, physician and plant safety engineers.

This committee supervises all safety activities and acts upon legislative matters pertaining to accident prevention.

ACCIDENT RECORDS

1. Importance of Proper Methods of Keeping and Compiling Accident Records—

   (a) To maintain interest in accident prevention
   (b) To show where safety work is required

2. Collecting Accident Records.

   (a) Cooperation of safety, medical, operating and employment departments
   (b) Suggested forms:
      (1) Daily record of all accidents
      (2) Notice of injury to employee
      (3) Foreman's report
      (4) Hospital records
      (5) Return to work notice

3. Tabulation of Accident Records.

   (a) Uniform system should be followed in all industries and plants
   (b) Definite tabulation of accidents
   (c) Accident charts should show:
      (1) Accident frequency. (Accident frequency should be expressed in terms of the number of accidents per 1,000,000 hours worked.)
      (2) Accident Severity. (Accident severity should be expressed in terms of days lost per 1,000 hours worked, not in wages lost. The scale of time losses for death and permanent disabilities, adopted by the International Association of Industrial Accident Boards and Commissions, will be found in Bulletin No. 234, of the U. S. Bureau of Labor Statistics, page 278.)

DAILY HOSPITAL REPORT

NUMBER OF ACCIDENTS ..... 192 ...

Main Hospital: Serious .....
Semi-Serious .....
Minor .....

Central Works: Serious .....
Semi-Serious .....
Minor .....

Serious ..... Semi-Serious ..... Minor ..... Total .....

NUMBER OF REDRESSINGS

Main Hospital .....
Central Works ..... Total .....

NUMBER OF MEDICAL CASES

Main Hospital .....
Central Works .....
General Office ..... Total .....

NUMBER OF OUTSIDE SURGICAL CASES

Main Hospital .....
Central Works .....
General Office ..... Total .....

NUMBER OF OPERATIONS PERFORMED

Major .....
Semi-Major .....
Minor ..... Total .....

Number of patients kept at Main Hospital .....
Number of new patients admitted to Main Hospital .....
Number of patients discharged from Main Hospital .....
Number of Vaccinations .....
Number of X-Ray Skiagrams made .....
Number of Urine Analyses .....
Number of Sputum Analyses .....
Number of Blood Counts .....
Number of Bacteriological Examinations .....
Number of treatments to employees other than ARMCO .....
Treatment to Visitors .....
Number of patients cared for at Main Hospital other than Company cases .....
Number of visits made to outside hospitals by Company physician .....
Visits made to homes of injured and sick employees by Company physician .....
Number of applicants for employment examined .....
Number of meals served to sick and injured employees .....
Number of meals served to other than Company cases .....
Number of Infections: ..... Name ..... Check ..... When Infected .....
Number of neglected injuries .....

GRAND TOTAL .....

ACCIDENT REPORT

Date.....19...,.....M.

Main / C. W.		
Check No.	Nationality	State Case No.

Name.....

Address.....Speaks English.....S...M...W....D...

Department.....Foreman.....

Occupation.....Age.....Service.....

How long at work at which engaged at time of the accident.....

Length of experience both here and elsewhere in occupation followed when injured.....

Number of hours continuously employed immediately preceding accident.....

Exact place of accident.....

How did accident happen?.....

.....

.....

Date and time of injury.....M. Injury neglected?.....

Nature and extent of injuries.....

.....

.....

.....

Classification of injuries, Minor ( ) Major (S-S.....S.....F.....)

Describe the treatment and duration of same.....

Any infectious disease?.....Infection?.....Occupational disease.....Neurasthenia.....

Kind of operation performed (Major.....S-M.....M.....).....

Laid off by.....Date.....Probable duration of disability.....Days....Weeks

Remarks.....

.....

Date retained in Hospital.....Released from Hospital.....

Injury first came under observation of.....M. D. Nurse Attended by.....M. D. Nurse

X-Ray taken.....Date.....Photo No.....This report by.....

RECORD OF SUBSEQUENT ATTENTION RECEIVED BY PATIENT

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Insert X if failed to report as told.

Date dismissed.....Date returned to work.....Disability from.....to....

Compensated for.....weeks. Total amount of compensation $.....

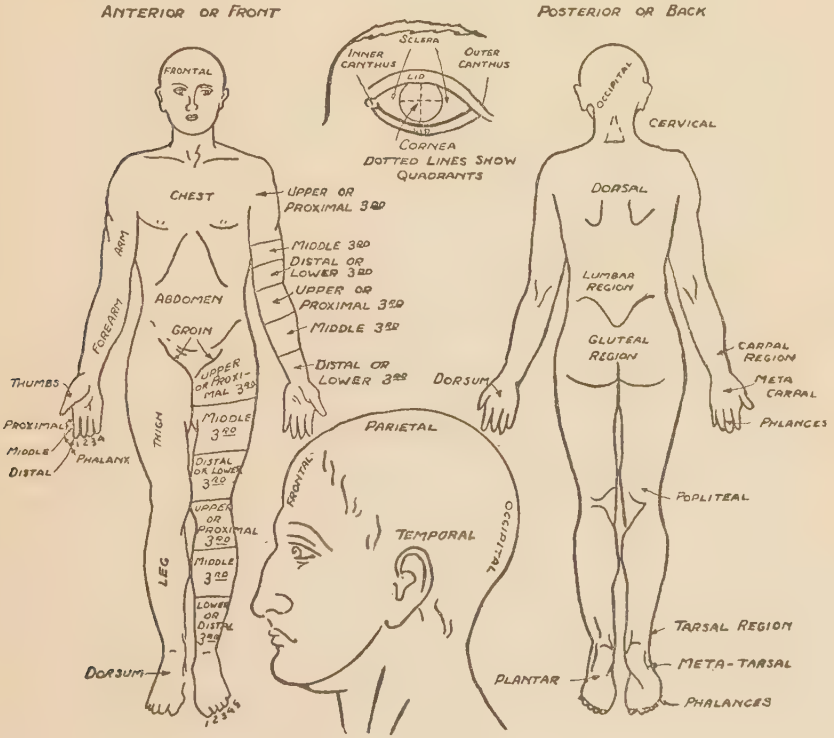
Monthly Case No. [ ]

ACCIDENT REPORT CHART

CONTUSION – BRUISE BLACK AND BLUE
ABRASION – SKIN KNOCKED OFF – BARKED
INCISED WOUND – CLEAR CUT.
LACERATION – TORN CUT
CRUSH – MASHED. WITH DESTRUCTION OF TISSUES
FRACTURE – CRACKED OR BROKEN IN TWO
COMMINUTED FRACTURE – SEVERAL PIECES
COMPOUND FRACTURE – BONE PENETRATING THE SKIN
HEMATOMA – COLLECTION OF BLOOD UNDER SKIN

LIGATE – TO TIE OFF
SEVERANCE – CUT IN TWO
EXCISED – CUT OUT OR AWAY

SUTURE – STITCH
STRAIN – STRETCHING OR SLIGHT TEAR OF LIGAMENTS OR MUSCLES
SPRAIN – LIGAMENTS OR MUSCLES TORN AWAY FROM ANCHORAGE
BURNS – { 1ST DEGREE – REDNESS OF SKIN; 2ND DEGREE – BLISTERS; 3RD DEGREE – DESTRUCTION OF SKIN AND DEEPER TISSUES }
PROXIMAL – NEAREST TO
MIDDLE – BETWEEN
LATERAL – SIDE
DISTAL – FARTHEST FROM



1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12

RECORD OF PHYSICAL EXAMINATION

NAME | BIRTH DATE | NATIONALITY AMER. | SERIAL NO. | DATE EXAMINED

VISION
RIGHT EYE 20/ LEFT EYE 20/ CORRECTIBLE:- RIGHT EYE 20/ LEFT 20/
COLOR TEST: RED BLUE YELLOW GREEN

HEARING
ORDINARY CONVERSATION — RIGHT EAR LEFT EAR

ORAL CAVITY
NOSE
THROAT
TEETH MISSING UPPER - RIGHT 8 7 6 5 4 3 2 1 LEFT 1 2 3 4 5 6 7 8
LOWER - RIGHT H G F E D C B A LEFT A B C D E F G H
DENTAL WORK RECOMMENDED

GENERAL APPEARANCE
HEIGHT FEET INCHES WEIGHT LBS.
SMALL MEDIUM LARGE THIN FAT FLABBY MUSCULAR WIRY NERVOUS QUICK
HEALTHY SICKLY ROBUST PALE RUDDY ERECT STOOPED NEAT SLOVENLY SLOW

CHEST
FORCED INSPIR. INCHES FORCED EXPIR. INCHES GIRTH INCHES
PECULIARITIES: SYM. ASYM. BBL. FLAT CHICK. BR. FUNNEL WING SCAP. MUS. SPAS. VIT. CAP.

CARDIO VASCULAR SYSTEM
PULSE RATE CHARACTER OF PULSE SYST. P. DIAST. P.
HEART SOUNDS
CONDITION ARTERIES AND VEINS HEART MUSCLE

LUNGS
NUMBER OF RESPIRATIONS RESPIRATORY SOUNDS
RALES FRICTION SOUNDS VOCAL FREMITUS
TACTILE FREMITUS PERCUSSION NORMAL

MENTAL & NERVOUS CONDITION
REFLEXES MENTAL CONDITION
CO-ORDINATION
GLANDULAR SYSTEM
EPILEPSY OR FAINTING
EVIDENCES OF INTEMPERENCE

GENERAL DEFECTS
EYES AND EYELIDS
HEAD FACE
NECK ARMS
HANDS TRUNK
SPINE GROIN
LEGS FEET
ARCHES SKIN
EVIDENCES OF VENEREAL DISEASE
EVIDENCES OF OLD INJURIES OR OPERATIONS
GENITO URINARY.
GASTRO INTESTINAL

URINE
SPECIFIC GRAVITY ALBUMEN SUGAR
REACTION MICROSCOPIC FINDINGS

REMARKS
PREVIOUS HEALTH RECORD

WORK CONDITIONS
IS APT TO FEEL EFFECTS OF SMOKE ACID FUMES DUST DAMPNESS HEAT COLD NOISE
CANNOT STAND HEAVY WORK LIFTING WORK STOOPING WORK CLIMBING WORK
CONTINUAL STANDING WORK

RATING
DISPOSITION OF APPLICANT (If Necessary — Add Explanations)
A
B
C
D

SYMBOLS :-
O O.K. For Anything
C O.K. For Anything but Exceptions
R O.K. Only For Certain Kinds of Work. See M.D.
X does not Pass Examination.

CERTIFIED TO _____ M.D.
EXAMINING PHYSICIAN

Miscellaneous Reprints and Contributions

What Is First Aid?

From *Johnson's Standard First Aid Manual*

FIRST aid to the injured has been aptly described as a bridge between the accident and medical or surgical assistance, and over this bridge the injured person is to be carried from the place of injury to a place of treatment. Once the bridge is crossed, and the injured person is placed in the hands of the medical attendant (or hospital), first aid is at an end. Such action is first aid whoever may render it. A person trained in first aid, a physician, or a nurse may render more skilful aid than one who is untrained, but in every instance the action is first aid.

First aid teachers, workers and trainers are apt to go beyond the scope and limit of true first aid as here outlined. For example, the treatment and care of injuries, the administration of medicines, the diagnosis and treatment of disease are no part of first aid work.

It is undoubtedly a mistake for first aid teachers to attempt to train workers in anatomy or physiology, except when limited to the most elementary phases; certainly it is far outside the principles of first aid to attempt the treatment of disease, the after-care of wounds, the setting of fractures and the like. It is a well settled principle that it is dangerous for first aid workers to attempt any form of treatment other than the simplest temporary measures.

The layman, called upon to apply first aid measures, should ever bear in mind the oft-repeated injunction: "Send for a physician." However great or small may be the emergency, nothing can take the place of a physician. "A little knowledge is a dangerous thing." "Beware of an axe in the hands of a child." All of the first aid manuals ever printed, if taken together, would not transform a layman into a surgeon. Hence, it is of prime importance that the layman shall acquire the art of knowing just when to cease all attempts at first aid and place the patient in the hands of a medical attendant.

The Need for Infection Prevention Treatment in Industry

By Arthur C. Carruthers, Editor *Safety Engineering*

FEW industrial officials realize the enormous preventable loss which American industry suffers each year on account of infected industrial injuries. Owing to the fact that there has existed a lack of information and statistics, bearing upon losses caused by infection, the opportunity for

correctly visualizing this condition has not been presented, important and serious as it is.

Safety Engineering, realizing the need for such information, has made an investigation of losses caused by industrial infected injuries, and as a result of this inquiry, it is now possible to present figures which disclose a truly enormous loss including life, limb, health, happiness, time and money, which is occurring each year on account of infection and which is at least 90% preventable.

The information presented herein, we believe, will prove of interest and value to industrial officials who are striving to eliminate preventable loss in their organizations. Through inexpensive and comparatively simple precautionary measures, systematically and correctly applied, any industrial plant can almost eliminate infection losses in connection with injuries sustained by their employees.

Truly remarkable records have been achieved in infection prevention in many industrial plants, proving that infection is entirely controllable by proper precautionary treatment.

Dr. W. Irving Clark, a prominent industrial physician of wide experience, in his book, "Health Service in Industry," mentions one company employing about 900 machinists, that had but one accident in which time was lost from infection out of 4,869 accidents. The period covered was 23 months. The company with whom Dr. Clark is associated, The Norton Company, Worcester, Massachusetts, large manufacturers of grinding and abrasive wheels, has gone for over 2½ years without an infection.

The Winchester Repeating Arms Company has had only two cases of an employee losing any portion of the body due to infection, out of 54,958 cases.

It is clearly evident that the costly losses which infection entails have been practically eliminated in the above mentioned plants, through infection prevention.

It should be realized equally by both management and employees that infection is a possibility and a hazard with every injury, in which the skin is broken or penetrated. That every injury, no matter how trivial it may appear, wherein the skin is broken, has serious possibilities due to the hazard of infection, and that infection can take place in a few moments, and consists of living germs, which are everywhere present, entering the body through a break in the skin.

Therefore, the need is present with every such injury, that antiseptic or infection prevention measures should be given to the injury as soon as possible after the injury has occurred, and an infection prevented, is of such value to the employer and employee that all can heartily co-operate in the effort, as all share in the benefit.

The most precious moments in infection prevention are the moments when the injury occurs, and as in the case of fire, if treatment is immediately given in the vast majority of cases, infection like a serious fire can be entirely prevented.

So often and repeatedly has the value of prompt emergency first aid treatment been recommended, and so general is now the understanding by intelligent people, that infection is caused by germs and that the application of an antiseptic is for the purpose of killing the disease-causing germs, it would seem the part of common sense and good management that every injury which offers the possibility of infection should receive prompt infection prevention treatment.

A review of the high percentage

of infections which are now occurring in our industries, shows that there is a great need for the observance of this precautionary treatment. That infections are occurring out of all proportion to what they should, entailing enormous losses in many different ways to employers and employees.

There is no more constructive and progressive policy which any industrial establishment can pursue than that of waste elimination. Our greatest and most successful industrial organizations are the best examples of its value.

Probably there is not an organization in the world which surpasses the Ford Motor Company in its operation and management from a waste elimination standpoint. Through intensive study, every waste-causing operation and happening has been located, and that loss eliminated, a degree of efficiency and profit has been secured which has no parallel in industrial history. In other words, the set-back of waste has been eliminated, and every operation in that vast establishment carries with it a profit rather than a loss, with the result that the Ford Motor Company holds the unique position it does today.

To visualize the extent of the losses due to infections in connection with industrial accidents, we now turn to some figures which will enlighten us on this point.

During the year ending June 30, 1924, there were 62,881 compensable accident cases in the State of New York, of which 6,692, or over 10½%, were infections. The average compensation cost per non-infected case was $480.75. The average disability period per non-infected case was 24⅔ weeks. The average compensation cost per infected case was $897.66. The average disability period per infected case was 42½ weeks. The average increased compensation cost per infected case was $416.91. The average increased disability period per infected case was 17⅚ weeks. The total additional compensation cost of these 6,692 infected injuries was $2,789,961.72. The total additional disability period on account of these infected injuries was 119,340 weeks.

The additional cost of medical and surgical attendance is not included in these figures, as casualty insurance companies who would pay these costs under their compensation policies do not appear to have segregated the figures covering the extra medical and surgical cost due to infections.

As there was an average increase in the disability period of 17⅚ weeks on account of infections, before the injured workman resumed work, and he received on the average an increase of $416.91 compensation payment, he, during that period, was in the great majority of cases, under medical treatment, the extra cost of medical and surgical attendance on account of infection would undoubtedly run into a big sum of money.

The Travelers Insurance Company estimates that on an average the loss incurred by the employer not covered by the compensation insurance policy, is between three and four times that of the insured loss, namely, compensation and medical and surgical cost and of course, the longer the man is disabled, the more is the loss, both to the employer, and in the majority of cases, to himself, for comparatively few workers receive compensation payment the equal of their wages when they are working. It is in most cases only a part of their regular wages.

Following herewith is a classification by injury of the New York State compensable accident cases for the

year ending June 30, 1924, showing the number of cases, compensation cost, and period of disability of both the non-infected and infected cases, and the increased compensation cost and disability period in each class.

BRUISES, CONTUSIONS AND ABRASIONS

No. of Cases	Average Compensation Cost	Average Disability
12,151	$154.39	9 weeks
1,185 infected	250.84	11 weeks
Increase per case infections	96.45	2 weeks

BURNS AND SCALDS—*Head*

462	411.93	23 weeks
9 infected	491.67	25 weeks
Increase per case infections	79.74	2 weeks

BURNS AND SCALDS—*Upper Extremities*

1,335	180.42	11 weeks
185 infected	205.83	12 weeks
Increase per case infections	25.41	1 week

BURNS AND SCALDS—*Lower Extremities*

1,075	89.16	5 weeks
67 infected	294.82	8 weeks
Increase per case infections	205.66	3 weeks

CUTS, PUNCTURES AND LACERATIONS

22,802	261.60	13 weeks
5,044 infected	345.20	15 weeks
Increase per case infections	83.60	2 weeks

AMPUTATIONS—*Upper Extremities*

1,857	1,010.21	59 weeks
22 infected	2,112.55	84 weeks
Increase per case infections	1,102.34	25 weeks

AMPUTATIONS—*Lower Extremities*

71	1,685.15	70 weeks
12 infected	1,743.00	114 weeks
Increase per case infections	57.85	44 weeks

DISLOCATIONS

536	550.00	32 weeks
1 infected	780.00	39 weeks
Increase per case infections	230.00	7 weeks

FRACTURES

No. of Cases	Average Compensation Cost	Average Disability
14,153	$662.88	28 weeks
126 infected	1,404.17	65 weeks
Increase per case infections	741.29	37 weeks

SPRAINS AND STRAINS

8,064	164.03	10 weeks
22 infected	1,015.68	27 weeks
Increase per case infections	851.65	17 weeks

FOREIGN BODIES—*Head*

249	293.41	24 weeks
22 infected	1,565.91	95 weeks
Increase per case infections	1,272.50	71 weeks

LOWER EXTREMITIES

126	305.83	12 weeks
7 infected	562.29	14 weeks
Increase per case infections	256.46	2 weeks

OHIO'S EXPERIENCE—INFECTED INDUSTRIAL INJURIES

We will turn to a consideration of the situation of industrial infected injuries in the State of Ohio—another leading industrial state, wherein through the Industrial Commission much attention has been given to accident prevention, health conservation and the prevention of industrial disease.

In the year 1916, the Industrial Commission of Ohio made an investigation embracing 82,392 industrial accidents in which 8,877 were infections; that is, one in every nine were infected injuries as a result of neglect in properly caring for them at the time of the injury. The non-infected injuries caused an average time loss of twelve days, whereas the infected injuries averaged a time loss of twenty-nine days, almost two and a half times as long. Twenty-seven of these infections resulted in death, and many others in the loss of an arm, a leg, or an eye, *although in the first in-*

stance they were minor injuries, and had they received prompt infection prevention treatment should not have caused a loss of time of more than a few days at the most. These infected injuries cost the State Fund a total of $460,333. Compared to the cost of non-infected injuries they cost $270,294 more than they would have cost had they been non-infected. It is estimated that these 8,877 infected injuries could have received prompt first aid treatment for less than $20,000, and would have saved well over a quarter of a million dollars, and in addition the lives of twenty-seven workmen, together with the saving of limbs, health and a great amount of human suffering.

These infections, according to industrial classifications, ranked as follows:

1. Vessels.....21.56%
2. Meat packing and stock yards .21.52%
3. Bakers-Confectioners.....18.69%
4. Textiles.....16.11%
5. Leather goods and shoes.....14.75%
6. Warehouses and storages.....14.08%
7. Laundries, ice companies, gas workers.....13.36%
8. Spirit manufacturers.....12.96%
9. Oils, etc.....11.69%
10. Wood.....11.56%
11. Miscellaneous.....11.56%
12. Coal merchants, storage companies and scrap iron.....11.44%
13. Public employees.....11.24%
14. Paper.....10.48%
15. Pottery and glass.....10.44%
16. Coaches, carriages and wagons 10.20%

In commenting on these figures the Industrial Commission of Ohio stated: "First aid of the right kind is important in both minor and serious injuries. In serious injuries it may, and often does, determine whether a man shall live or die. In minor injuries first aid is important not alone in saving life, but in greatly reducing the period of disability caused by injuries, and points out that every employer for his own protection should make full and adequate provision for first aid in his establishment, and having done this, the management has the right and should insist that all persons injured, no matter how slightly, report to the first aid station for the necessary treatment."

This is a vital need, and employers should thoroughly impress this upon the minds of every employee that they must not be the judge as to whether a trivial injury needs treatment or not, but systematically go at once to receive infection prevention treatment immediately the injury occurs.

MASSACHUSETTS EXPERIENCE—INFECTED INJURIES

Tabulatable Injuries—Average Infections

In the year 1922.....10%
In the year 1923.....11.11%
In the year 1924.....10%
In the year 1925..... 9%

An investigation made by the Department of Labor and Industries has indicated in the great majority of cases facilities for first aid treatment were available, but that the employees neglected to make use of them.

There were 5,021 cases of infection for the year ending June 30, 1925, which constituted 8.5 per cent of the total tabulatable injuries. These infections occurred as follows:

ABRASIONS, BRUISES, CONTUSIONS
743 cases.....9 deaths

BURNS AND SCALDS
91 cases.....2 deaths

CUTS, PUNCTURES, LACERATIONS
3,161 cases.....13 deaths

FRACTURES
5 cases.....2 deaths

SPRAINS AND STRAINS
5 cases.....No deaths

ALL OTHERS
935 cases.....5 deaths

AMPUTATIONS
81 cases.....No deaths

5,021 cases—Total Total—31 deaths

Insurers under the Compensation Act paid out in Massachusetts for medical and hospital services during the year ending June 30, 1925, $2,364,580. This sum represents 32.3 per cent of the total payments of the year.

During this period 98,566 injured employees were furnished either medical or hospital treatment at the expense of the insurance companies. The medical work of the Board has been administered from the viewpoint that employees are entitled to adequate medical and hospital treatment, but that the cost of such treatment should be reasonable.

The director of the Department of Labor and Industries of Massachusetts states that "the Massachusetts experience indicates the importance of first aid treatment."

It is to be regretted that other industrial states are not in a position to furnish statistics bearing on the frequency or cost of infected industrial injuries, but as this is a subject of very great importance to every state, it is to be hoped that all industrial states will in time furnish such information. However, the experiences of New York, Ohio and Massachusetts are undoubtedly typical, and probably no states will show a better experience and possibly some would show a higher percentage of infections, due to less activity and advancement in accident prevention, injury treatment and health conservation activities in relation to industry.

It is estimated by those best able to judge that not less than 2,500,000 industrial accidents occur in the United States each year. Taking the ratio of 10 per cent, as New York State compensation accidents show, also the Ohio investigation, and Massachusetts experience with tabulatable injuries, which has fluctuated from 11.11 per cent to 9 per cent in the years 1923, 1924 and 1925, we arrive at the figures of 250,000 infected industrial injuries per year. New York State, which goes into these figures more extensively than any other, shows that the average increase in compensation cost on account of infection in all classes of injuries is $416.91, and the average increase in disability period on account of infected injuries, all classes of injuries, is 17⅝ weeks.

Multiplying the unit cost of increased compensation and increased period of disability on account of infection, we arrive at the enormous figures of $104,227,500, on account of extra compensation cost, and 4,458,333 weeks of disability, and, as before mentioned, this does not include the enormous cost of extra medical and surgical attendance in connection with these 250,000 infected injuries.

Therefore, comment on the urgent need for an intensive infection prevention campaign in American industry is unnecessary. The figures speak for themselves, and remembering that this enormous loss is about 90 per cent preventable, it is clearly evident that every industrial establishment should conduct an infection prevention campaign and eliminate this costly loss to its employees and to the company.

First Aid Treatment in Industry

By Andrew F. McBride, M.D.*
* Commissioner of Labor, State of New Jersey

Reprinted from *Safety Engineering*

I CONSIDER the question of first aid treatment in industry to be one of major importance, superseding as it does that of many others that present more dramatic and appealing possibilities, and requiring prompt technical attention from industrial administrators if we are to expect, within a reasonable time, a decrease in the toll of sorrow, suffering, sickness, and distress that persistently and unremittingly follow a lack of proper plant surgery.

While I know the whirling belts, in-running gears, and twisting shafts in a modern mill machine accident provide dramatic stage settings that impress more vividly the imagination of the ordinary observer than do the rather drab surroundings that usually accompany a severe infection or a blood poisoning case, still, New Jersey's record for the fiscal year of 1926 shows that sixteen people lost their lives and approximately two thousand suffered severe physical handicaps under conditions and from circumstances that fully warrant a medical man in assuming they could have been prevented if proper and sufficient surgical treatment had been given and maintained from the time of the occurrence of the accident.

While it would be an easy task for the Department of Labor to summarize in imposing figures the extent of the financial loss suffered by these victims of poorly regulated industry, it would be impossible to attempt to compute in measurable terms the sorrow, suffering, pain, and anguish that were the inevitable backwash following in their wake, which accentuate the responsibility of society for its delinquency in discharging the obligation it owes to its citizens when we realize that these preventable catastrophes could have been avoided by the application of sound principles of engineering science.

I have been so deeply impressed with the value of first aid treatment and plant surgery from my own professional experience that some time ago I prepared a booklet on the subject and instructed our Inspection Bureau to have a copy of this work placed in the hands of every plant manager in the State of New Jersey. In view of the availability of information on this subject matter at the present moment, I feel that a failure on the part of plant managers to provide skilled surgical treatment for injuries suffered during the course of a man's employment is an inexcusable dereliction of duty that should be condemned and never condoned in this day and age when the eyes of industry have been opened to the fatal consequences that usually follow neglected or improperly treated wounds that have been suffered during the workers' period of employment.

Experience of a Shipbuilding Corporation

In our departmental files we have a luminous experience on this subject that fully warrants us in giving the matter pre-eminence over many others having a more direct appeal to the popular imagination. The working experience of a large shipbuilding corporation with a record of accidents so numerous and costly that the corporation found it difficult to obtain a carrier for workmen's compensation

insurance, fully sustains the contention that first aid treatment properly administered has an important bearing on production costs, labor turnover, and general overhead expenses. The accident experience of this shipbuilding corporation was so unfavorable that the management lent a ready ear to the conditions imposed by an insurance carrier before taking this risk. One of these conditions was that a plant surgical department should be installed and that all wounds, even of the most trivial character, should be treated and that no workman should be allowed to leave the shipyard for surgical treatment except in cases where the plant surgeon deemed it advisable. It had been the practice of the plant to permit the men to go considerable distances to doctors, sometimes of their own choosing, or to ones preferred by the employment director, for treatment. The compensation rating experience of this company, together with the enormous overhead caused by a feverish and unusual labor turnover, were so burdensome that they absorbed no inconsiderable portion of the plant's net income.

At the end of the eleven months of experience under the new surgical regime, which included the appointment of safety committees, monthly meetings of plant foremen, as well as prompt treatment for injuries arising out of the work, ninety-two per cent. of the lost time accidents had ceased, plant production had increased in a most satisfactory manner, while the enthusiasm manifested by plant foremen, supervisors, safety committeemen, and others who were concerned in the promotion of this health conservation campaign, showed the possibilities that may be developed when proper attention is paid to the human needs of our industrial army.

Seven Rules for Providing Best Working Conditions

The employer should be willing to provide the best possible working conditions in order to safeguard the health of his employees and thereby add to their efficiency and regularity of employment. This can best be done by:

1. Providing pleasant, comfortable work rooms.

2. Providing appliances for the removal of physical hazards, due to the presence of dusts, gases, heat and smoke, and poisonous trade vapors if they are present in the breathing atmosphere.

3. Providing appliances for lessening manual labor and reducing fatigue.

4. Providing intelligent and sympathetic, as well as efficient, supervision over the workmen. It has been well recognized that the efficiency of an employee is greatly reduced by constant interference on the part of an autocratic overseer.

5. Conducting an educational campaign for health and safety among employees in co-operation with the health departments. This work, if tactfully carried on, can be extended throughout the plant and into the homes of the workers and in this way the standards and modes of living can be greatly improved.

6. Co-operating with the health departments in any work of an investigative or research character which the local or state authorities may want to carry on in the plant.

7. The establishment of an available Hospital or First Aid Division within the plant or conveniently situated thereto.

Medical Relief in Some Form Should Be Available in Plant

Every manufacturing plant should have some form of medical relief

available to employees. The form of relief required depends largely on the character of the work done in the factory and upon the number of employees. Every factory, no matter how small, should have at least a well stocked first aid cabinet, administered by someone in the plant who has had a comprehensive course in first aid treatment. A larger plant should install a dispensary in charge of a trained nurse. The character of the equipment would depend on the nature of the work carried on in the plant. This nurse could properly utilize a part of each day in home visitation work, in looking after absentees and sick and injured employees. Absenteeism has been greatly reduced where this work has been carried out in an intelligent manner.

A large factory should have, in addition to the nurse and dispensary, a physician who should always be on call. It would be better yet if this physician were employed as a full-time man who could devote the time not needed in the dispensary to a study of plant conditions and processes, determining the hazards connected with each process, as well as the type of employee best suited to the work to be done. Physical examinations of all applicants for employment in all plants should be conducted, and as rapidly as possible physical examination of old employees should be carried out with periodical re-examination of the entire plant personnel. In this way it would be possible to put the right man on the right job, and to a very large extent, prevent a recurrence of the mistake of putting a workman at a task unsuited to his strength.

Where a number of small plants are located close together, it would be entirely advisable for them to join in the establishment of a central dispensary in charge of a nurse, and at least have a doctor on call who would care for the medical needs of their employees. The cost of this dispensary could be met on a per capita basis, and I believe if this suggestion were intelligently carried out, it would provide reasonable care for a large number of industrial workmen who now have no care of this kind.

I am convinced that the results achieved by modern plant surgery fully justify the presence of any latent enthusiasm on the subject, that may be noted in this presentation of the subject. If it were necessary to provide more convincing evidence of its utility a careful examination of the answers returned on the questionnaire submitted to industry by the Department some years ago would convince the most skeptical that money and time expended in this direction (like bread cast upon the waters) are returned many fold and pay higher dividends than any other form of plant effort.

Eye Infections

By Arthur C. Carruthers

Reprinted from *Safety Engineering*

THE eye being an extremely delicate and valuable organ, eye injuries should only be treated by a physician, wherever and whenever possible. The extraction of foreign bodies should never be attempted by the layman, for this operation is a delicate one and can only be safely performed by an experienced surgeon.

There are numbers of eye accidents

continually happening where neither the physician nor his instruments are promptly available. Unfortunately, an accident is liable to happen anywhere at any time. Wherever men work, even in remote places far from skilled medical help, a serious injury is liable to occur, and whatever possible can be done to relieve the victim or prevent further eye damage, it is only human for it to be done.

Where the injury is of such a nature that it can wait for the arrival of a physician, this should be done, but there are classes of eye injuries in which immediate first aid treatment is urgently needed before the physician can arrive.

Applying antiseptic treatment to the eye is a very different thing from applying antiseptic to other parts of the body, and no antiseptic should be applied to the eye by a layman unless he thoroughly understands the nature of the injury and what is the suitable application to apply. Different eye injuries require different treatments. For instance, severe burns are likely to be sustained by workmen in the manufacture or use of caustic soda. The mucous membrane of the eye is particularly susceptible to injury from burns of this nature.

Plants and industries, which use chemicals or processes particularly harmful to the eye, should be equipped with the proper first aid remedies, and some one always available who is competent to give immediate first aid treatment if a physician's services are not available.

A physician, after acquainting himself with the nature of the chemicals and processes used in an industrial plant which are liable to cause eye injuries to the workers, could give instructions to some one and have prepared the correct remedies to be applied for immediate treatment, when such treatment is necessary in his absence.

Acid and caustic soda burns on the eyes require immediate treatment as the burns proceed very rapidly and may cause blindness unless immediately washed with water. The best neutralizer for each chemical should be on hand.

Under no circumstances should a layman attempt to remove a foreign body from an injured man's eye, for experience has demonstrated that in many cases injury is done to the eye, and there is every chance of the eye becoming infected from contact with unclean fingers, or whatever is used in attempting to remove the foreign particle. All cases of foreign particles in the eye should be removed only by a physician, but, where some time elapses before his arrival, the application of a boric acid solution is all that should be attempted.

Remarkable reductions in eye injuries have been accomplished, and such results testify to the fact that the reduction of eye accidents can surely be accomplished if given careful and systematic treatment.

A machine tool company of Cincinnati installed a special room for the treatment of eye injuries. This concern reduced the number of cases of foreign bodies in eyes from 5,016 to 1,302 and in the following year this was reduced to 979. During the year preceding the installation of the room severe eye cases were referred to an eye specialist some eight miles from the plant, at a cost of $1,052. In the first year after the introduction of the eye room, the cost of eye injuries was reduced to $412. The second year the compensation was $26, and in the third year the cost was only $3.50.

Fifty cases of eye infection in the State of Washington caused a loss of

1,024 days and $10,446 in compensation. The prevention of infection in connection with industrial eye injuries is a difficult problem, for, as has been pointed out, we cannot make use of many of the commonly used antiseptics, amongst which is iodine, for the eye is a delicate organ different from other exposed surfaces of the body, and what could be applied for the prevention of infection in an injury to the foot, arm, or leg cannot be used for eye treatment, which emphasizes the necessity for only a trained physician to treat this class of injuries successfully.

Industrial Health Promotion in Small Plants

By Carey P. McCord, M. D., Cincinnati, Ohio

From the Journal of the American Public Health Association

FOR the purpose of this report, a small plant is considered, one employing less than 500 workers. The term "plant" is not limited to manufacturing organizations, but embraces such others as mercantile, mining and transportation. These small plants utilize the services of the principal part of the 41 million gainfully employed persons in the country. An exact distribution of workers in manufacturing establishments by size of manufacturing enterprise is recorded by the current census as shown by chart on the following page.

It appears from this chart that 99 per cent of the factories employ 500 or less persons, and of the total, 9,096,372 factory workers, 5,500,625 or 60 per cent are engaged in these small plants. These figures reflect the conditions obtaining in all the major divisions of occupation.

In large industrial plants the medical department has become a definite part of the organization. The manufacturer, the wage earner, and the community alike, share in the established values derived from a factory medical department that regularly serves all employees in any sickness or injury; that throws around them healthy, sanitary working conditions; that educates them in safety measures; and that places them on jobs for which they are individually, physically and mentally suited. Because of these immediate returns, the medical department justifies and pays for itself year by year. This very fact of self-maintenance should clothe industrial hygiene with extraordinary significance as a measure for the general betterment of community health.

What Constitutes Adequate Services for a Small Plant

In small plants, medical work is usually limited to the care of emergencies. Such services are ordinarily obtained by sending the injured or sick person to some neighborhood physician. In severe emergencies any available neighborhood physician may be called into the plant. These physicians may be well qualified to take care of medical or surgical conditions, but very obviously they do not serve the best interests of the patient as a worker, or of the manufacturer, in that they are not industrial physicians—are not acquainted with trades processes and industrial health hazards. Their services, however excellent, only care for the unnecessary by-product of bad plant conditions.

Minimum Essentials

Some or all of the medical activities

CENSUS OF MANUFACTURES: 1919 UNITED STATES BUREAU OF THE CENSUS

Size of Plant, No. of Wage Earners	Number of Establishments	Per cent.	Wage Earners, Average Number	Per cent.
None other than owner.	37,827	13.		0.
1 to 5.....	141,859	48.9	312,404	3.4
6 to 20.....	56,195	19.4	631,182	6.9
21 to 50....	25,386	8.7	830,448	9.1
51 to 100...	12,409	4.3	895,235	9.8
101 to 250..	10,056	3.5	1,579,661	17.4
251 to 500..	3,605	1.2	1,251,795	13.8
501 to 1,000	1,749	.6	1,205,628	13.3
Over 1,000 .	1,019	.4	2,390,019	26.3
	290,105	100.	9,096,372	100.

Percentage of plants having 500 or less workers, 99.
Percentage of workers in small plants, 60.4.

must be carried out on the factory premises.

Activities may not be limited to emergency relief measures, but must include some or all of such related measures as periodic physical examinations, accident prevention, health education, dental services, etc.

A work place (first-aid room, dispensary, hospital), suited in size and equipment to the individual plant, must be maintained on the premises.

The physical conditions of the plant, such as lighting, air conditions, drinking water facilities, etc., must receive such regular attention as will assure a continuous conformation to existing Board of Health or other legal requirements.

Such medical work as is carried out in the plant dispensary should be without cost to the worker. The expenses for such work as is not covered by industrial commission or insurance should be borne by the employer.

THE PRESENT EXTENT OF INDUSTRIAL MEDICINE IN SMALL PLANTS

1. Less than 1 per cent of the sizable small plants maintain adequate medical departments.

2. Physical conditions and general health conditions of workers are in a lower state in small plants than in large ones.

3. Physical conditions and general health conditions of workers are better today than ten years ago.

4. Industrial commissions, factory codes, factory inspection, group insurance, national safety organizations, etc., have been of benefit in the health conservation in small factories.

METHODS OF EXTENDING MEDICAL SERVICE TO SMALL PLANTS

Out of the efforts to procure these needed medical services for small plants, a number of approaches have been proposed:

1. The utilization on a full-time basis of a physician, not only for medical work, but for such other activities as employment management, safety supervision and personnel work. The assumption of all these duties by one person usually warrants the small plant in securing a high type of physician. In mining enterprises this method has been most commonly employed. Success here is in part due to the fact that such an industry is usually conducted in isolated areas necessitating medical service for the families of the workers. Where medical service is limited to the plant premises a full time physician is rarely justified when the number of employees is less than 300.

2. In some localities attempts have been made to solve this matter through the association of several closely situated or related plants, for the purpose of establishing dispensaries and of employing industrial physicians and such other personnel as may be required to render health supervision to the several plants participating on a pro rata basis. In actual practice, this method has been

successfully applied in a few instances. In other instances, it has failed as the result of unequal amount of co-operation from the plants participating.

3. Another approach is to be found in the association of a group of industrial physicians, hygienists, safety engineers, statisticians, etc., for the purpose of rendering to small plants medical supervision in quantities and character suited to their needs. Such an organization daily and regularly spends a certain fixed time in the several plants. For emergencies, services may be had at the plant by communicating with the emergency physician held in reserve for such purposes. Sanitary and safety investigations are conducted at such intervals as may be deemed desirable from a knowledge of conditions obtaining in the several plants. This method has the advantage of supplying at a low cost to the manufacturer the services of a group of workers qualified in a variety of industrial health and personnel problems.

4. Recently a health bureau for trade unions has been devised and is now in operation. While not designed for small plants, such plants may participate in its services, wherever the workers are thus organized. In the conduct of this bureau the union local appears to be the unit rather than the factory. This type of service has the advantages and limitations common to all service bureaus originating within labor organizations.

Summary

Ninety-nine per cent of industries employ 500 or less workers and utilize 60 per cent of the industrial wage earners.

Working conditions and health conditions of workers are generally lower in small plants than in large ones.

Less than 1 per cent of small plants have at the present adequate medical departments.

In the conduct of industrial medical work, emergency relief is not sufficient. Continuous supervision of physical working conditions, accident prevention, and physical examinations are essential.

Industrial medical work should be carried out on the factory premises.

The monetary returns to the manufacturer from a properly conducted medical department warrant his generous support.

Equipment for the First-Aid Room

By Thomas Edward Hicks

Industrial First Aid Division, Johnson & Johnson

Reprinted from the *National Safety News*

IF we are to believe the ancient axiom, "An ounce of prevention is worth a pound of cure," one hundred dollars spent on infection prevention will in the end save sixteen hundred dollars. From an economic standpoint, then, the investment is well worth while.

Let us consider particularly the factories employing 500 people or less, for 60 per cent of the workers in the United States are employed in these smaller plants. What the larger group, employing one thousand and over, has learned after great expenditures of time and money may be put

into practice by those who can not afford such experimentation.

Industrial establishments with less than 100 names on the payroll are in the majority, and because of their size are more difficult to interest in the economics of the subject. The owner manager may know all his men by their first names and seriously take an interest in their well-being, but he probably goes only so far into first aid as the laws of his state requires.

A first aid cabinet will undoubtedly furnish a protection for the one hundred employees, but an examination of several hundred cabinets during a recent investigation demonstrated that this form of first aid service does not command sufficient respect.

It is usually affixed to the wall near the foreman's or superintendent's office, and there it hangs to gather dust. A good barometer of the condition of the kit is the bottle of iodine. If it has turned to the consistency of maple syrup one may decide that the bandages are no longer sterile, the scissors and forceps rusted and the tubes of burn dressing exhausted or thrown away.

There is no industrial enterprise employing as few as ten men which can not afford to set aside and partition off an area ten feet square, to be used as a first aid room, and in which may be kept the first aid cabinet. It is inadvisable to treat injuries in the shop proper. There is a certain amount of dignity to a room of this character, which subconsciously takes possession of the mind. It is there that the wounded patient may look for first relief. A doctor may do his work there if called in, because of the seriousness of the injury. Preparatory to the trip to a hospital or to the doctor's office, in this room a wound may be protected, the flow of blood checked, a fracture temporarily splinted by a person assuming the duties of first attendant.

Some thought should be given to the location of the room under discussion, and a southern exposure is best, if available. Plenty of light and air are desirable prerequisites to physical equipment, for in the treatment of shock and fainting pure air is Nature's first antidote.

A cot, or combination stretcher and cot, is one of the first pieces of furniture to be considered, for a person who may become dizzy, often by lying down for a few minutes, may return to his or her work in an improved condition, thereby lessening the chance of accident. If at all possible, the running water should be piped to this room and a wash basin installed. It is not necessary to have a hot water coil when an inexpensive electric heater may be attached to the one cold water pipe. It is so arranged that when the operating handle is in different positions, either cold, warm or hot water may be obtained.

Two iron chairs, a table with enameled top, a supply of towels, soap and a pair of blankets, will serve to complete the equipment. All of this should be obtained for less than $200, an investment that will pay dividends.

When we come to establishments employing from 100 to 300, it is considered almost a vital necessity to have a first aid room. In this case it is better to increase its size from ten by ten to ten by twenty feet. An inside partition should be set up at least six feet high to separate the cot from that part in which dressings are applied. It is not improbable that two persons may be in need of treatment at the same time, whether

it be that one of them is resting or both actually injured.

We do not realize that our eyes are affected by colors as our noses are affected by various odors. It is, therefore, advantageous to decorate the walls with a neutral color which will rest the eyes. Hospitals throughout the country have studied this matter from all angles, and we find them turning more and more to a neutral shade of green, which is both decorative and restful to the eye. Linoleum on the floor quiets the step and is easily cleaned.

The regulation first aid cabinet should be augmented by additional bandages, cotton, adhesive plaster and specialized dressings for injuries most common in that particular industry. A hypodermic syringe is a valuable instrument to have on hand in case a doctor is called in. He may find it necessary to inject a drug to deaden the pain, and if a needle is not available the patient will suffer while one is being obtained elsewhere. *Narcotics should not be kept at hand;* the doctor will furnish them. An extra tourniquet and plenty of aromatic spirits of ammonia and iodine or mercurochrome may prove their worth many times over in time of urgent need.

It is better to have an enameled iron bed and separate stretcher than to combine the two in the form of a combination stretcher and cot. Valuable additions are enameled wash basins, a foot tub, hot water bottle, pillows, rubber bed blanket, waste pail and small electric sterilizer.

When planning first aid service for plants which employ from 300 to 500, the advisability of employing a part time doctor must be considered. In especially hazardous occupations it will pay to have a doctor visit the plant at certain hours during the day.

Inasmuch as the main object of the first aid room or dispensary is to afford quiet surroundings, it would be useless to try to get along with one large room if many daily treatments are necessary. A waiting room may be inexpensively equipped which will keep waiting patients from getting in the way of the doctor or nurse.

Storage space for additional bandages and general supplies may be furnished either by the purchase of a specially designed cabinet or by having a carpenter build in a cupboard under the direction of the person who is to be in charge of the stock.

Periodic physical examination of employees is recognized as being an aid in accident prevention work. For these examinations it will be necessary to screen off a part of the main room, or better still, build a separate room. A desk for the examining physician should be included, as well as eye charts and other equipment that he may suggest.

Physiotherapy and its equipment should be left to the local hospital. It is inadvisable to install expensive specialized instruments unless there is a continued use for them.

Industries embracing plants of from 500 to 1,000 employees will require that one trained nurse, at least, should be in constant attendance. Inasmuch as the nurse will be the one best fitted to decide on the proper equipment, the management should be governed by his or her recommendations.

Let the employer of few realize that what pays the employer of many on a great scale will pay him in proportion. No amount, within reason, spent on equipment intended to cut down the time of an injured employee's disability will be misspent. The average additional cost of an infected injury

in compensation alone is four hundred dollars, not including medical fees; interest on money invested in idle machinery; cost of training a new operator; business lost through inability to make deliveries on time, and other items directly traceable to the infection.

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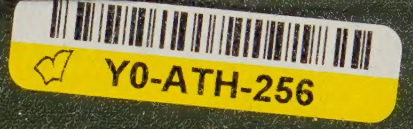
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